INFO WORLD

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MULTIMEDIA



Selling the dream
Industry leaders aim for the mainstream. **See page 559**

TEST CENTER



Multimedia software
We test five authoring tools for PCs and Macs. **See page 76**

Novell recants; will enhance NetWare 2.2

By Vance McCarthy

In what analysts are calling a dramatic change of heart, Novell Inc. plans a host of add-ons to the NetWare 2.2 operating system, company officials said last week.

Plans for NetWare 2.2 stand in sharp contrast to indications last month — even within Novell — there would be no more NetWare 2.2 development.

Analysts said the news is a victory for users, and reflects a change of heart within Novell. "NetWare 2.2 clearly became a higher priority after [Novell] heard from their customers, and saw competitors try to take advantage," said Paul Zaegaeski, a LAN analyst at The Yankee Group, in Boston.

Plans for the NetWare 2.2 (286-based) upgrade include

See NETWARE, page 127

Apple breaks Macintosh OS mold

Will port Macintosh extensions to Windows

By Tom Quinlan

NAPA, CA — Apple Computer Inc. is breaking the Mac operating system mold with plans to modularize the software, revamp the user interface, and port key portions of it to Microsoft's Windows environment this year.

As outlined at a systems software forum here last week, Apple intends to transform itself into a true systems software company by introducing extensions to its System 7.0 software in a modular format, letting users decide what features they want for a price.

OS extensions for the Macintosh to be introduced this year include OCE, AppleScript, a new Imaging model that supersedes QuickDraw, and a QuickTime Starter Kit. No dates or prices have been set yet. Other advanced features, including handwriting and speech recognition, will probably be offered to users in the same way, Apple said.

The company also intends to make these technologies available for the Windows environment in the future, a move that's

See APPLE, page 127



GERALD ZARR/IDG

Apple's John Sculley: Tailgent compliments the Mac. **(See story, page 127.)**

OCE provides workflow engine with System 7.0

By Tom Quinlan

NAPA, CA — Apple Computer Inc. gave a quick glimpse of its Open Collaborative Environment at the Macintosh System Software Forum here last week, but it's still unclear how Apple will establish its fledgling collaborative technology in the enterprise.

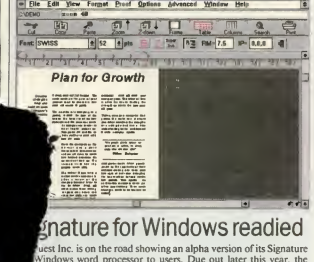
OCE will provide users with a microcomputer-based workflow/document management engine, a uniform directory and mailbox, security, store-and-forward features, privacy, and authentication services available across multiple platforms.

As defined by Gursharan Sidhu, technical director of Apple's Collaborative Systems Development, OCE will sit on top of Apple's System 7.0 architecture. It will control services such as Inter Applications Commu-

See OCE, page 127

SCULLEY EXCLUSIVE

Apple Computer's John Sculley tells *InfoWorld*: 'The Macintosh is still the core of what we do.' ..... **§30**



gnature for Windows readied

uest Inc. is on the road showing an alpha version of its Signature Windows word processor to users. Due out later this year, the gram sports a completely customizable interface. **See page 15.**

WordStar and Delrina set for merger

By Lisa Picarille

WordStar International Inc. and Delrina Technology Inc. plan to merge, WordStar chairman and CEO Ron Posner is expected to announce early this week, said sources close to the deal.

Officials from WordStar, in Novato, California, and Delrina, in Toronto, declined to comment.

The pooling of interests could put the market value of the combined companies at more than $115 million. Delrina stock traded last week around $3.90 per share, while WordStar's stock hovered at $4.10.

The combined company would have more than 400 employees — 300 of them WordStar workers. Industry watchers, however, expect that some cuts could come in overlapping areas such as sales and

See MERGER, page 127

Lotus moves into multimedia arena

Will use multimedia across line

David Coursey and Lafe Low

Lotus Development Corp. today is expected to announce its strategy for adding multimedia features to its word processing, graphics, and communications products.

The announcement marks Lotus' first major step into multimedia and comes as the company begins a week of meetings with customers, analysts, and reporters at its Cambridge, Massachusetts, headquarters.

Lotus plans to use multimedia in its help and education tools across its product line. The company also plans to add sound, animation, video, and other features to its Notes groupware; cc:Mail electronic messaging; Freelance Graphics presentation software; and Ami word processor, said Steve Barlow, Lotus' multimedia product manager.

"Lotus is going to take a leadership position in these technologies," Barlow said, adding that multimedia ranks high in the company's plans to add sparkle to what some have

See LOTUS, page 127

> **Multimedia ranks high in plans to add sparkle to our existing line.**
>
> *Steve Barlow*

NEWSPAPER $2.

An open letter to dBASE users

From Philippe Kahn, Chairman of Borland



I am proud to announce dBASE IV® version 1.5, the first version of dBASE® since we acquired Ashton-Tate four months ago, is now available.

Version 1.5 is a faster, easier-to-use and more powerful version of dBASE. New features include mouse support, faster Query By Example data retrieval, 40 work areas, new BLANK support that lets you detect when fields are empty, open architecture Control Center, editable multi-file views, C language–like file I/O so dBASE programs can read and write files of any type, as well as other enhancements.

Borland has tested dBASE IV thoroughly. We stand behind it. In fact, to ensure your satisfaction, we'll guarantee you a complete, no-questions-asked refund, within 60 days of purchase if you are not totally satisfied.

What's next? We have several development teams working right now to build the latest technology into dBASE. For example, we will bring a dBASE compiler for Windows to market, which owners of the Developer's Edition will receive *free!* And we're putting this same technology into a DOS dBASE compiler. Of course, we will continue to enhance dBASE across platforms, including UNIX and VAX VMS.

I want to make sure that I get your feedback about our dBASE products. Call my Voicemail directly at 1-800-851-2122 with your critiques and suggestions. I'll personally make sure that your thoughts are taken into full account by our development team.

At Borland, we are committed to building the products you need. dBASE IV version 1.5 is an important, first step in the right direction.

Thank You,

P.S. You can order your upgrade now. Call 1-800-331-0877, Dept. 6306



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NEWS

Clock-doubler blows into town

Intel486 DX2 combines high performance, low price

BY CATE CORCORAN

OEM versions of Intel Corp.'s clock-doubling chips are now shipping, with systems vendors promising users state-of-the-art performance at cut-rate prices.

The Intel486 DX2 runs at 50 MHz internally and 25 MHz externally, and gains much of its cost benefits because hardware manufacturers don't have to build a system using extremely fast 50-MHz parts to optimize system performance.

"If you look at everything that goes into a true 50-MHz system — the faster memory, the faster ASICs, better shielding, a bigger heat sink — you start to understand why full 50-MHz systems were so expensive," said Steve Maliszewski, Compaq Computer Corp. director of desktop marketing.

According to Maliszewski, Compaq will offer nearly the same performance with its DeskPro 50M as it has with its true 50-MHz-based DeskPro, but will be priced thousands of dollars less.

In addition to Compaq, at least 30 other vendors have announced support for the chip. Dell Computer Corp., which is shipping the DX2-based computers now, is charging users only $100 more for the souped-up systems than for its base 33-MHz 486 system. (For more on systems, see story, this page.)

The chips' performance, however, is expected to vary, depending upon the applications used. While the chip processes instructions internally at a 50-MHz clock rate (Intel estimates the 25/50 DX2 performs 40 million instructions per second) it communicates with the rest of the system at 25 MHz.

"You get a performance boost internally, but you lose performance in terms of outgoing data traffic," said Matt Cain, senior research analyst with the Meta Group, in Westport, Connecticut.

"This chip will be confusing to end-users," Cain said. "It will be a while before the market sorts this out. People won't go blindly into clock doubling but will wait to see what the price/performance is to be gained."

The 25/50 Intel486 DX2 is only the first of a series of speed-doubling chips that Intel intends to release in SX and DX models. A two-speed chip, coming later this year, will run at 66 MHz internally and 33 MHz externally.

Intel will also address the aftermarket with a retail version of the technology, called the OverDrive, that users can buy and install in existing 486-based systems themselves.

The 25/50 version of the OverDrive will initially retail for less than $700, said David House, a senior vice president for Intel. The price will drop to less than $500 by next year.

"Intel is trying to make its existing product line as granular as possible and hit all price points," Cain said. "Intel is trying to make the 486 as attractive as possible to migrate users to the 486 and get them out of AMD's clutches."

— Tom Quinlan contributed to this story.

Firms jump on dual-speed bandwagon

BY CATE CORCORAN AND TOM QUINLAN

Virtually every 486 designed to date can be upgraded with a 486 DX2 dual-speed processor, but a number of manufacturers will introduce new systems incorporating Intel's latest clone-killer chip line.

Dell Computer Corp. is shipping DX2 versions of four existing midsize desktop and advanced systems. The systems run as much as 50 percent faster than similar 33-MHz models, according to Dell, but the company is charging users only $100 more for these systems.

An entry-level Dell System 486P/50 with 4 megabytes of memory, a 100-megabyte hard drive, one floppy drive, and a VGA color monitor costs $2,799. A similarly configured 486P/50, which has additional expansion capabilities, will retail for $3,179.

Compaq Computer Corp. is also shipping products, with an emphasis on "intelligent scalability" and an attempt to prove it can achieve both technological innovation and competitive prices.

The DeskPro 50M, based on the 25/50 MHz DX2 processor, is available in three models, ranging from $4,399 without a hard drive to $6,199 with a 340-megabyte hard drive.

For much the same reasons, Tandy Corp. has introduced the 4850 EP system, with performance as much as 70 percent greater than its 25-MHz-based 486. At a list price of $2,699, the 4850 will come with 4 megabytes of memory, a 120-megabyte hard drive, Super VGA graphics, and hopefully a low enough price/performance ratio to erase Tandy's image of offering low performance for a high price.



Compaq has entered the speed-doubling market with its DeskPro 50/M, priced at less than $5,000.

"We think this product, along with some other low-cost systems we've already introduced, will go a long way toward establishing us as a price/performance leader," said Howard Elias vice president of Tandy Computers.

Other vendors that will support the chip include Advanced Logic Research Inc., AST Research Inc., Epson America Inc., Everex Systems Inc., Gateway 2000, Grid Systems Corp., Hewlett-Packard Co., NCR Corp., Olivetti USA, Toshiba America Information Systems Inc., Unisys Corp., Wyse Technology Inc., and Zenith Data Systems.

AT DEADLINE

Early reports: sparse Michelangelo damage

Users apparently practiced safe computing last week as early reports Friday indicated the Michelangelo virus had caused less damage to PC users than anticipated. Initial reports from various sources tallied about 30 companies in the United States reporting damage. Hundreds of PCs in the Pacific Rim and in Europe were hit by the malicious computer virus set to activate at midnight March 6.

"It seems the message has gotten through to people [to protect their systems]," said Julian Horwich, director of the Corporate Association of Microcomputer Professionals, in Deerfield, Illinois. Cupertino, California-based Symantec Corp. reported that 250,000 PC users worldwide received a copy of its anti-Michelangelo edition.

— Torsten Busse

HP is test-marketing subnotebook

Hewlett-Packard Co. is testing the market for a bigger, beefier subnotebook computer. The machine the company may build is the 3-pound HP XN, a company official said.

Like the popular HP 95LX, the HP XN would include serial, parallel, and infrared ports, as well as a PCMCIA memory card slot, according to a specifications sheet obtained by *InfoWorld* and being circulated for users' opinions by an outside firm. The proposed computer is built around the 3.3-volt 20-MHz AMD 386SXLV processor and has a battery life of approximately 4 hours. Standard configuration would include a 20-megabyte hard disk drive and 2 megabytes of RAM. Depending on the research results, the XN could become a product, but it will probably not appear this year, the company said.

— Yvonne Lee

Interleaf for DOS, Mac readied

Interleaf Inc. is bringing Interleaf 5 to DOS next month and will port its high-end publishing system to the Macintosh in September, the company said. A Windows NT version will follow, but the Waltham, Massachusetts-based company did not specify a date.

The workgroup product now runs on Unix platforms and offers advanced features such as charting, document management, and "active" documents that access, evaluate, and act on information, in addition to standard desktop publishing features. Pricing for a five-user DOS version will be $8,000. The DOS version will match the features of the Unix version; the Windows NT and Mac versions will take advantage of document and application-linking capabilities.

— Jeanette Borzo

Philips to introduce CD recorder

Philips Electronics Co. plans to introduce a drive that can record disks used by CD ROM drives, photo CD readers, CD-Interactive devices, and audio CD players at the Multimedia and CD ROM Expo, in San Francisco, this week. The company will also announce an agreement with Meridian Data Inc. to include Meridian's NetScribe in future versions of the drive.

— Mark Brownstein

cc:Mail for Mac sports new look

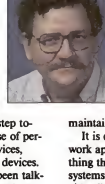
Improved performance and more Mac-like features are bundled in cc:Mail for Macintosh 2.0, which is expected to be introduced this week by the cc:Mail division of Lotus Development Corp.

The upgrade is intended to make cc:Mail more competitive with products from CE Software and Microsoft Corp., which dominate the Macintosh mail market. The new user interface allows most operations to be done with the mouse or keyboard shortcuts, said Jack Marsal, cc:Mail product manager. Priced at $495 for a platform pack and $595 per 25 users, the release will ship next month, according to Shelley Harrison, marketing manager of the Mountain View, California, division. Current users will get free upgrades.

— David Coursey

Editorial / Stewart Alsop

Apple Computer does the right thing with OCE services



Apple revealed many of the details of its future system software extension called Open Collaborative Environment, or OCE (among other things), at its Macintosh System Software Forum last week. We're enthusiastic about what Apple has accomplished with OCE. This is the first time a major system software vendor has committed to integrating the foundation for group work into the system itself. We think this is the first step toward promoting and establishing the use of personal computers as communication devices, rather than just calculating and storage devices.

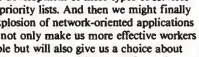
But there's a problem. People have been talking about groupware for years. There has been this fuzzy idea that somehow, if you connect computers together, people should be able to share their work with each other more effectively than they can either without computers or with unconnected computers. But not much has happened so far.

Lotus has introduced and effectively promoted Lotus Notes as a way to share information. Notes also happens to be relatively difficult to install and maintain, but Lotus is working on that. More importantly, Notes is just one product from one vendor. And other products that use the network to help share information, such as Instant Update from On Technology, Mezzanine from Saros, Info-Alliance from Software Publishing, and Keyfile from Keyfile Corp., also tend to be difficult to install and maintain.

It is clear that the basic problem is that network applications developers have to do everything themselves because network operating systems are so primitive. Lotus is forced to provide all of the replication, security, and directory services within Notes because the operating system it chose to use as a platform for Notes — OS/2 — didn't provide those services. And Lotus chose OS/2 because it provided better task management, priority management, and other features than most other operating system alternatives.

The solution to this problem is exactly what Apple is doing with OCE. The system vendor has to take responsibility for providing enough services within the operating system on both the client and the server that application developers don't have to reproduce what should be common services. With those kinds of services available, Macintosh developers will be able to design and implement networked applications much more quickly, and customers will be able to install and use them it much more widely.

What Apple still needs to provide is these same solutions for non-Macintosh platforms. Microsoft faces the same challenge outside of the Windows environment with its Windows Open Services Architecture (WOSA). If nothing else, we hope these efforts produce motivation for other vendors — Novell and IBM in particular — to move the development of these types of services up their priority lists. And then we might finally see an explosion of network-oriented applications that will not only make us more effective workers and people but will also give us a choice about how we want to accomplish those lofty goals.



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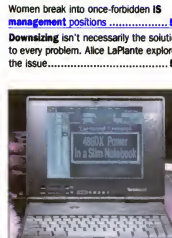
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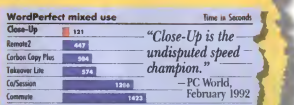
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Close-Up Wins Remote Honors

PC WORLD

Close-Up is fast, easy to use, and reliable. What else do you need in a remote package?

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"Close-Up is the undisputed speed champion."
—PC World, February 1992

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Central Point Commute 1.1	673	☆½	☆½	☆☆	☆☆	☆☆	½	☆☆☆	★★
Close-Up Dual Pack 4.0	672	★★★★	★★★★	★★★★	★★★★	★★	★★★	★★★½	★★★★
CO/Session 6.0	674	☆☆☆½	☆☆½	☆½	☆☆	☆☆½	☆½	☆☆☆½	★★½
pcAnywhere 4.03c	675	½	☆☆	☆½	☆☆☆	☆☆	☆	☆☆☆½	★½
Remote2 2.1	676	☆☆☆	☆☆☆	☆☆½	☆☆½	☆☆☆½	☆☆½	☆☆☆½	★★★
Takeover Lite 2.0	677	☆½	☆½	☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆☆½	★★

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

Actual test results reprinted from PC World's Reviews of Remote Communications Software, February 1992.

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—Reprinted from PC Magazine, January 14, 1992

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—PC World "Best Buy," February 1992

"Close-Up is one of the fastest products we've seen. It had the fastest file transfer times and the shortest times redrawing the screens."
—LAN Times, November 18, 1991

"You will not find a better all-around remote-control program."
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Symantec to announce TimeLine for Windows

BY LISA PICARILLE

Symantec Corp. is expected to announce Tuesday a Windows version of its market-leading TimeLine project management program, according to sources briefed on the company's plans.

TimeLine for Windows — slated to ship next week — sports a spreadsheet-like user interface similar to Symantec's low-end Windows project manager, On Target. TimeLine for Windows, however, offers the higher end functionality found in its DOS counterpart TimeLine 5.0, such as effort-driven scheduling, individual resource calendars, and support for 8,000 tasks per file, according to sources.

In addition, the Windows version offers support for Object Linking and Embedding, which allows users to merge information from various sources into a single report and have that report information updated if it is changed in another window, beta testers said.

The program also features a connect tool for visually defining dependencies, an icon bar, infoboxes, and an auto-scaling mechanism for fitting entire reports on a single page, testers said.

TimeLine for Windows also includes a feature that uses artificial intelligence to determine whether there is a scheduling conflict. Once an ambiguity has been detected, the program asks users whether they would like the problem resolved automatically.

The product is priced at $699 for stand-alone and server versions. Additional LAN nodes cost $599 each. Users of TimeLine 5.0 for DOS can upgrade for $129 through May 15 and get each additional LAN node for $99 during the same time period.

On Target users can upgrade for $199. Users of Microsoft Project can purchase TimeLine for Windows for $199, sources said.

Symantec, in Cupertino, California, declined comment.

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BetterYet allows switch between PostScript, PCL5

BY TOM QUINLAN

A RISC-based accelerator card from Output Technology Corp. offers LaserJet II and LaserJet III a performance improvement of as much as 2,000 percent and the ability to automatically switch between PostScript and PCL 5.

OTC will formally announce its BetterYet IV product next week, and plans to demonstrate the product at spring Comdex.

BetterYet IV is a combination of an accelerator card based on Intel Corp.'s i960 RISC processor that plugs into the LaserJet's I/O port to increase printing speeds and a cartridge that takes command of the printer controller.

The cartridge provides HP PCL 5 and PostScript emulation and enhances the LaserJet output to 600 by 300 dots per inch (dpi).

BetterYet also enables the printer to recognize PostScript and PCL 5 files automatically, so users don't have to reconfigure the printer each time. OTC expects this to be an important selling point as millions of LaserJets are sold in network environments.

Unlike other resolution enhancement techniques offered by printer vendors, OTC offers a real horizontal resolution of 600 dpi instead of dithering the dots to create the appearance of better resolutions.

The increased resolution is used primarily for fonts, the company said. Bit-mapped graphic images are still printed at a standard 300 by 300 dpi.

OTC intends to start shipping the product in May, with a list price of $995. Another version of the product, designed for use with the LaserJet IID and IIID systems, is expected this summer.

The company has no current plans to develop a product that supports PostScript Level II.

Output Technology Corp., in Spokane, Washington, can be reached at (509) 536-0468.

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Merger builds multimedia powerhouse

MacroMind, Authorware will pool software resources

By Jeanette Borzo

MacroMind Paracomp Inc. and Authorware Inc. announced last week plans to merge resources into an as yet unnamed company, creating one of the largest players in the multimedia software market.

MacroMind, which is known for its animation, three-dimensional, and multimedia authoring tools, merged with Paracomp only last summer. Authorware provides multiplatform authoring tools for interactive learning.

"I'd say they are definitely a powerhouse," said Denise Caruso, San Francisco-based editor of *Digital Media, A Seybold Report*. "Especially with Paracomp in there now, too. They certainly have a corner on the multimedia tools market, especially for the Mac."

"The upside is breathtaking because of their separate strengths and the possibilities for their combined strengths," said Bill Caffery, vice president and director of the Gartner Group, in Stamford, Connecticut.

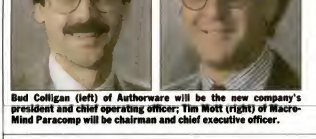
"MacroMind's product set is absolutely stunning," Caffery said. "With Authorware, they finally got a stabilizing anchor to their otherwise counterculture creativity."

Tim Mott, president and CEO of MacroMind Paracomp, will be chairman and CEO of the new company; Authorware president and CEO John (Bud) Colligan will be president and chief operating officer.

"There are no layoffs planned at this point," said Joe Fantuzzi, Authorware's vice president of marketing.

Both companies' flagship products are multimedia authoring tools, but the $8,000 Authorware Professional is used more for training and educational purposes, whereas the $995 MacroMind Director is used for presentation applications.

(For a comparison of the products, see "Multimedia Authoring Tools," page 76.)



Bud Colligan (left) of Authorware will be the new company's president and chief operating officer; Tim Mott (right) of MacroMind Paracomp will be chairman and chief executive officer.

No 32-bit graphics in initial OS/2 2.0

Engine won't be ready March 31

By Ed Scannell

IBM will not include the 32-bit graphical engine in OS/2 2.0 when it ships this month, although officials said the program's hybrid 16/32-bit engine meets performance goals.

Company officials declined to say when it would ship the 32-bit engine, being jointly developed by IBM and Micrografx Inc., but said they will eventually ship 32-bit device drivers that support the engine.

"What we will be shipping [this month] is an engine that includes some 32-bit technology," said Fernand Serrat, vice president and general manager of marketing business development for OS/2. "The discussion we are having now is how much 32-bit technology do we ship at which point in time."

"There just isn't enough time to test things thoroughly," said one source familiar with the project. "If we were willing to slip the deadline a couple more weeks we could do it, but it is an issue of not wanting to take the risk."

IBM also will ship device drivers at a later date to support seamless Windows capabilities in XGA and Super VGA graphics. The version shipping this month supports seamless Windows in VGA graphics only.

"We will update all of the higher resolution modes with device-driver updates in the near future," said Tommy Steele, director of IBM's Personal Systems Programming Center.

While there are more than 900 developers promising delivery of about 1,200 32-bit applications by year end for OS/2 2.0, IBM officials are vague on how many of those will take full advantage of the program's graphical WorkPlace Shell.

"The bulk of [software developers'] work is centered on trying to get their apps over to 32-bit, with the second consideration being to make their interface consistent with the WorkPlace Shell," Steele said.

With OS/2 2.0's feature set frozen as of two weeks ago, IBM remains confident it will meet its March 31 ship date. Steele admits, however, that final performance tunings will continue until the last week of this month. Because of this, sources believe the company will not begin shipping in volume until the end of April.

Microsoft attempts to open Windows, but the industry may not step through

By Stuart J. Johnston

Microsoft Corp.'s announcement last month of a blueprint of Windows standards was greeted with interest by industry veterans, but many anticipate resistance to the plan from major software vendors.

The idea behind Microsoft's Windows Open Services Architecture (WOSA) is to let industry members design standardized application programming interfaces and service provider interfaces that let system implementers mix and match front-end applications with back-end server products. (See "Gates details enterprise plan," March 2, page 1.)

"It could be particularly good in [corporate] organizations where they haven't been able to standardize applications," said Keith Herron, a member of the Microcomputer Managers Association board of directors.

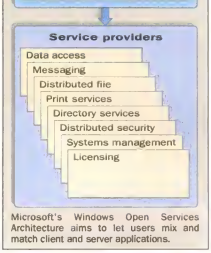
"It's just a part of the evolution of the platform, and it's a good strategy on Microsoft's part," said Bill Cornfield, president of The Windows Support Group, a New York-based corporate systems consultancy.

However, some developers said they are participating only in areas that concern them, such as codevelopment of Microsoft's Mail Applications Programming Interface for Windows.

Others expressed doubts that competitors, with their own APIs under development, are likely to participate in Microsoft's so-called open process.

"It's unclear to me what Novell, IBM, Borland, and other service providers will do," said Jesse Berst, editor and publisher of *Windows Watcher*, an industry newsletter.

"Corporate America is so heterogeneous that I really don't think they're going to adopt [WOSA] unless the big software vendors do," said Christine Comaford, president of Corporate Computing Inc., a Sausalito, California-based systems consultancy.



Microsoft's Windows Open Services Architecture aims to let users mix and match client and server applications.

Safari SL subnotebook to be offered with docking station

By David Coursey

Safari Systems next month plans to introduce a lightweight subnotebook computer with an optional portable docking station capable of housing a radio modem, floppy disk and CD ROM drives, and standard PC add-on cards.

Also new will be a novel keyboard-based cursor control device, designed by the company, that can be used instead of a traditional mouse or trackball, sources close to the company said.

Pricing for the under 5-pound, 25-MHz, 386SL-based machine will be less than $5,000 with an 80-megabyte hard drive, Microsoft DOS 5.0, and Windows 3.1. A 120-megabyte hard drive option also will be available.

Using the SL chip's power management features and Safari-specific technology, battery life is expected to be about 8 hours. The display will be a 9½-inch liquid crystal panel display with VGA resolution. A built-in modem will be standard.

The machine is described as small enough to fit sideways into a user's briefcase beside a stack of papers. It will support standard PCMCIA memory cards and an outboard 3½-inch floppy drive, similar in size to those used by Apple Computer's PowerBook line, sources said.

The portable docking station will sell for less than $8[illegible] powered from AC or ba[illegible] and weigh about 5 pounds, sources said. The radio modem, drives, and other devices will be optional, adding to the docking station's weight and price.

Safari is the notebook [illegible] puter business unit of [illegible] Corp. and reportedly has [illegible]nfusing under NCR's [illegible] following the company's [illegible] out by AT&T.

The April 2 announcement could be the last for Safari, as the company's future is currently unclear under NCR management. Safari declined to comment on the upcoming products.

Safari Systems, in Somerset, New Jersey, can be reached at (908) 302-5800.



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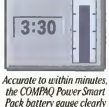
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IN A CATEGORY OBSI
AND LIGHTER, COMPAQ W
ANOTHER ADJ

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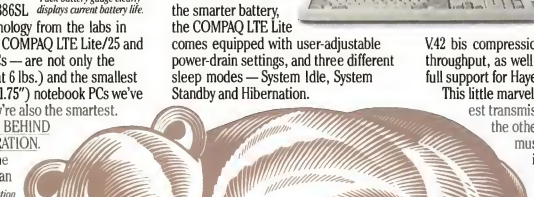
It can even instruct the notebook to save all open files to the hard drive if battery power should run dangerously low.

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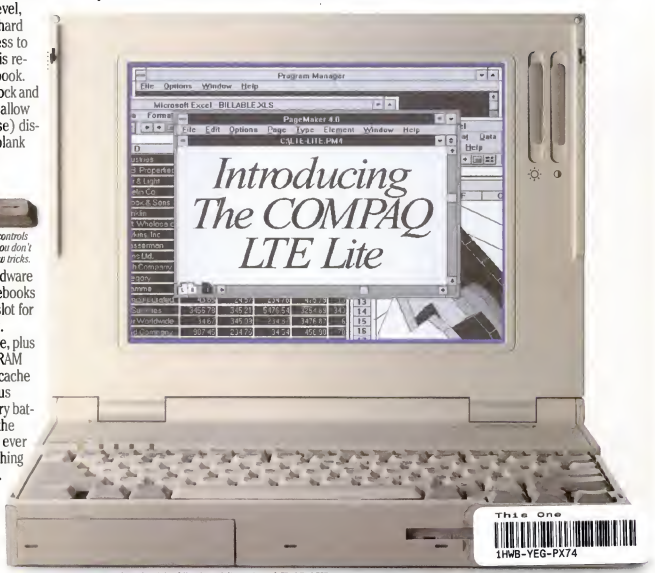
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Microrim products access VAX databases via Novell

BY SCOTT MACE

Users of Microrim's Vanguard Data Connectors can now access VAX VMS databases with Novell's SPX/IPX protocols, Microrim announced last week.

Vanguard Data Connectors had previously let RBase DBMS users — with DECnet networks — connect to Oracle, Ingres, and RDB VMS databases, using DEC's Pathworks client software. Vanguard Data Connectors for NetWare, now shipping, extends this connectivity to users of Novell networks as well.

Included is an IPX/SPX protocol stack for VAX systems not currently integrated into a Novell network. The products are compatible with DEC's NetWare VMS, as well as Leverage for NetWare for VMS from InterConnections of Bellevue, Washington.

Microrim also added speed and user-defined functions (UDFs) to RBase last week, announcing shipment of Version 3.1C, the latest offering in its Upgrade Express program.

Users can now add UDFs in Microsoft C or other languages. A UDF can be referenced any place in RBase in any command or operation that normally accepts an expression.

Users can also purchase packs of pre-written UDFs from Microrim for a nominal fee. These packs include a variety of functions, such as returning a date plus or minus a specific increment of months or years, checking for the existence of a DOS file, or notifying the user of a printer status.

The pricing for Vanguard for NetWare begins at $995 for a single user. RBase 3.1C sells for $795. Upgrades of 3.1 are available through Microrim's Upgrade Express program, and three UDF packs cost $19.95 for each collection of 10 UDFs.

Microrim is based in Bellevue, Washington, and can be reached at (800) 628-6990 or (206) 649-9500.

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CITIZEN

Toolkit to ease development of applications

BY CATE CORCORAN

SunSoft, the system software arm of Sun Microsystems Inc., last week announced that it is now shipping a toolkit that will ease development of client/server applications.

Using the Transport-Independent Remote Procedure Call (TI-RPC) Toolkit, developers can create one version of a program that will run across a range of operating systems, hardware platforms, and networks, the company said.

The toolkit generates client/server communications code automatically and shields developers from low-level networking code. It produces applications that are transport independent, meaning they need not be rewritten to support protocols in particular networking environments. TCP/IP, OSI, and NetWare's IPX/SPX are among the protocols supported by the toolkit.

The toolkit will make it possible for developers to write distributed applications using a common transport, Marty Palka, senior industry analyst in networking for Dataquest of San Jose, California. "It makes it easier for developers to deal with different protocols."

The TI-RPC Toolkit is bundled into Open Network Computing (ONC), part of the Solaris operating system. It also is available separately for $1,000.

AST, Borland, and Lotus plan to implement parts of the TI-RPC technology.

SunSoft licensed the TI-RPC portion of the toolkit from NetWise, which sells versions of its code for non-Sparc platforms, according to SunSoft. Novell is also licensing the TI-RPC technology from NetWise to produce its own toolkit. Applications created with it will be interoperable with applications created with SunSoft's toolkit, SunSoft said.

SunSoft, based in Mountain View, California, can be reached at (415) 336-0678.

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Ease of Use	9.1	8.2	8.2	7.9	7.9	7.4
Ease of Install/Upgrade	8.9	8.0	8.8	7.1	8.1	7.8
Price/Perform Return	9.1	8.3	8.5	7.5	8.1	7.1
FUNCTIONALITY						
Flexibility	9.1	8.8	8.8	9.0	8.4	8.8
Interface Capabilities	8.9	8.9	8.4	8.7	8.7	8.0
Comprehensiveness	9.1	8.8	8.8	8.3	8.7	8.7
User Friendliness	8.9	7.7	8.3	7.9	7.5	7.3
OS Compatibility	9.0	8.4	8.9	9.1	8.8	9.0
PRODUCT SUPPORT						
Documentation	9.0	8.2	8.6	5.7	6.2	7.3
Vendor Training	8.7	7.9	8.0	7.2	7.6	8.0
Problem Response Time	8.8	7.5	7.2	8.1	6.4	8.7
Quality of Vendor Support	9.0	7.8	7.5	6.4	6.9	7.0
Frequency of Releases	8.5	7.5	6.7	7.2	7.7	7.2
Response to User Request	8.8	7.5	7.8	7.0	7.0	7.3
Overall Satisfaction	9.3	8.7	8.5	8.3	8.0	7.9

Compiled from the 1991 Datapro Reports on Software/Computer System Series Software, available for each product listed (Bybase from 1992). The results are those of actual users of the products as surveyed by Datapro.

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Memory requirement	7.37	6.16	4.25	6.19	5.22
Ease of programming	9.03	7.09	6.06	6.20	5.90
Ability to manipulate data	9.19	7.41	7.44	6.81	5.67
Sorting capabilities	9.02	7.44	7.69	6.65	5.78
Provision for software security	8.88	6.93	7.28	5.07	5.78
Report writing capabilities	8.39	6.72	6.59	5.71	4.11
Ease of use of interface	8.81	7.05	6.15	6.10	6.10
Software integration capabilities	8.34	7.26	7.24	6.27	6.10
Ease of data retrieval	9.08	7.68	7.68	6.61	6.11
Satisfaction with product profitability	8.28	7.04	6.22	5.58	5.13
Overall quality of product	8.94	7.37	6.69	6.32	5.44
Product Features Average	8.84	7.10	6.61	6.14	5.60
SUPPORT FEATURES					
Provision for customer support	7.74	5.98	5.76	5.77	5.50
Charges for training time	6.88	4.49	4.59	5.64	4.56
Provision for technical support	7.61	5.78	5.72	5.87	5.22
Provision for marketing support	8.89	5.88	6.09	6.13	3.80
Documentation & product information	8.74	8.73	8.56	6.45	5.56
Frequency of updates & revisions	8.35	5.88	6.34	5.57	5.00
Support Features Average	7.73	5.79	5.84	5.90	4.94
Overall Average	8.34	6.86	6.35	8.08	5.38

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Here's the pitch. The revolutionary 386SL notebook technology we've pioneered with Intel will eventually be imitated by more than forty other makers. But we're a generation ahead. And while they're playing catch-up, we'll be widening our lead. By lowering our prices.

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NOTEBOOKS	MastersPort™ 386SX	MastersPort™ 386SL	MastersPort™ 386SLe
Processor Speed	386SX—20MHz	386SL—20MHz	386SL—25MHz
Memory (Std./Max.)	2MB/4MB	2MB/8MB (64K cache)	2MB/8MB (64K cache)
Power Management	Suspend/Resume Sleep Mode Low Battery Operation	Premier System Management™ Standby/Resume Fast Resume Panic Save Unattended Communications	Premier System Management™ Standby/Resume Fast Resume Panic Save Unattended Communications
Battery Life	up to 3 hrs.*	up to 6 hrs.*	up to 8 hrs.*
Mass Storage	3.5" 1.4MB FDD 60MB/80MB HDD	3.5" 1.4MB FDD 60MB HDD	3.5" 1.4MB FDD 80MB HDD
Video/Easy Scaler	VGA/116	VGA/320	VGA/320
Ports	Serial, Parallel, External VGA Monitor, Modem	Serial, Parallel, External VGA Monitor, Modem, External PDD, External PS/2	Serial, Enhanced Parallel, External VGA Monitor, Modem, External FDD, External PS/2
Software	MS-DOS® 5.0 included	MS-DOS 5.0 Pre-Installed; Microsoft® Windows v. 3.0 included	MS-DOS 5.0 Pre-Installed; Microsoft Windows v. 3.0 included
Security	—	Standard	Standard
DESKTOPS	**Z-316/SX**	**Z-386SX/20**	
Processor Speed	386SX—16MHz	386SX—20MHz	
Memory (Std./Max.)	1MB/4MB	2MB/16MB (64K cache)	
Mass Storage	3.5" 1.4MB FDD 40MB IDE HDD	3.5" 1.4MB FDD 80/200MB IDE HDD	
Video/Easy Scaler	VGA	SVGA	
Ports	Serial, Parallel, Mouse	Serial, Parallel, Mouse	
Software	MS-DOS 5.0 Pre-Installed;	MS-DOS 5.0 Microsoft Windows® v. 3.0 Pre-Installed Microsoft Mouse included	
Security	Optional	Standard	
Expansion	1 Open 6A Slot, Accessible 5.25" Drive Bay	5 Open 6A Slots Accessible 5.25" Drive Bay	

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Model 40
Low-cost entry into expandable 386SX desktop computing.

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Z-386SX/20
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Fast, affordable, and expandable 386SX/20 MHz performance at our best price yet.

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MastersPort 386SX
Model 60
Truly affordable, lightweight 386SX power for spreadsheet, text, and graphics applications.

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MastersPort 386SLe

Blazingly fast, second-generation SL notebook technology with 25 MHz, & 85MB hard drive.

NOW $2899

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intel inside

Resellers determine their own pricing which may be higher or lower than Zenith Data Systems advertised prices. All prices and specifications are subject to change. Prices are for models shown, in U.S. dollars, and do not include monitors. Shipping, handling, and applicable sales taxes not included in the price.

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*Extendable under SL/SLe rest/resume conditions. Battery life varies with application, CPU, clock speed, memory configuration, peripheral options attached, hard disk access and display settings.

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ZENITH data systems

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PIPELINE

SHIPPED

Low-cost scanner for Windows ships

Image-In Inc.'s Image-In ScanPaint is a low-cost scanning, painting, and retouching package for Windows. The 24-bit image scanning and editing package offers many features included in the company's higher end package, Image-In Color. The $149 program is now shipping. (612) 888-3633.

• • •

A network version of Freelance Graphics for Windows, the presentation software package from **Lotus Development Corp.**, is now shipping for $795 for the server edition and $495 for each node edition. With the networked version, users can share resources such as symbols, graphics, SmartMaster sets, and presentation libraries. (617) 577-8500.

ANNOUNCED

Blaise offers toolkit for Turbo Vision C++

Blaise Computing Inc. has announced support for Borland International's Turbo Vision applications in C++ with the Turbo Vision Development Toolkit, Version 2.0. The toolkit contains a Resource Editor for interactively producing or changing dialog boxes, a utility to convert Turbo Vision resources into Windows resource script files, and object and class libraries. Priced at $169, it will be available this month. (510) 540-5441.

• • •

Vision Software has said it will release a screen capture utility called CameraMan this month. Priced at $149, the Macintosh-based product will capture and play back screen activity into a QuickTime or PICS file for instructional purposes or product demonstrations. (408) 748-8411.

PROMOTIONS

Lotus offers volume discount on Improv

Corporate buyers who purchase 24 or more copies of Improv, Lotus Development Corp.'s spreadsheet software for the Next computer, will now be entitled to a volume discount. Specific pricing and terms will be determined by individual VARs and resellers, but the discounts amount to anywhere from 23 percent to 38 percent off the list price. (617) 577-8500.

Signature for Windows coming

XyQuest aims to beta test by June

BY LISA PICARILLE

XyQuest Inc. is gearing up to release a Windows version of its Signature word processor in the second half of this year.

Signature for Windows will sport a user interface that attempts to appeal to hard-core Windows users and traditional XyWrite fans, as well as users of the DOS version of Signature.

Although XyQuest is working with IBM to move its hefty installed base of DisplayWrite users to the Signature line of word processors, Signature for Windows is not directly aimed at those users, but at a broader market, according to Craig Cervo, XyQuest vice president of development.

Almost every item in Signature's interface is customizable. Users who don't want to give up the traditional XyWrite DOS method of accessing features can turn on a command line that appears above a customizable, graphical Button Bar. The Button Bar represents action items that can be created through a macro language.

The command line and Button Bar can be moved and placed in other locations onscreen.

Users can create their own icons or select from the more than 100 predrawn icons that will ship with the package. These icons can be placed in a window and moved anywhere on-screen.

Users can also create sets or groups of icons, assign the specific group a name, and access that set from the menu when a particular task is being performed.

In addition Signature for Windows, set for beta testing by June, will offer a status line that includes control facilities for typefaces and sizes.

The program will support Object Linking and Embedding and is fully editable in all views, zoom levels, and modes.

Unlike most of its competitors, who don't display any change in typeface or typestyle in draft view, Signature for Windows will highlight text that is bold and show character attributes. However, it does not indicate the type size of page layout commands in draft mode.

The Billerica, Massachusetts-based company is rebounding from several setbacks — most associated with the January closing of IBM Desktop Software, which codeveloped the word processor with XyQuest.

XyQuest is trying hard to avoid the pitfalls it encountered when consulting development of a Mac version of XyWrite. The company was never able to reach a consensus on whether XyWrite for the Mac should retain the feel of the DOS version of the product. The result: The Mac product never saw the light of day.

Pricing for the Windows version has not been determined, according to company officials.



Boolean operators in Autodesk 3D Studio let users sculpt models using 3-D objects as addition, subtraction, and union tools.

Autodesk's 3D Studio boasts speed increase

BY JEANETTE BORZO

Beta testers are pleased with the new version of Autodesk 3D Studio, which offers users speed increases and interface enhancements.

According to Autodesk Inc.'s multimedia division, Release 2 speeds performance 200 percent to 600 percent.

"There is a flat-out three times improvement in speed," said beta tester Bill Niemeyer, partner at StudioGraphics, in Belmont, California. "They also have made additions to the user interface so I can work faster. You can tell they've listened to the people who use the product and have built their requests into Version 2."

David West, another beta tester and head designer at Pixel Graphics Inc., in Nashua, New Hampshire, also appreciates the product's speed and likes the program's new Boolean operators that let users create indentations and extrusions in a model by using three-dimensional objects as addition, subtraction, and union tools.

"The addition of Boolean operations is one of the other real big things," West said. "It sure solves a lot of problems in modeling. It's almost the equivalent to sculpting in three dimensions. It's a lot easier than it would be to model from scratch," he added.

"The rendering quality has been improved," said Laurie Steele, a beta tester and owner of Epso Suspendo Animation, in Livermore, California. "The images are cleaner and crisper."

Although it takes a while to master the product, impressive results can be achieved quickly, Steele said. "Because it's such a sophisticated product it takes a long time to learn, to be able to use all aspects of the product."

Release 2 also offers improved DXF file handling capabilities and a new Video Post module for composing multiple layers of animations and backgrounds with precise control during rendering. The World-Creating Toolkit, shipping on a CD ROM, includes some 500 texture maps, 200 FLI and FLC animation files, and 70 photo-realistic 24-bit still images.

The company plans to unveil Autodesk 3D Studio, Release 2 today at the National Computer Graphics Association conference, in Los Angeles. It is scheduled to begin shipping immediately.

Current users of Autodesk 3D Studio can upgrade to the $2,995 product for $395.

Autodesk, in Sausalito, California, can be reached at (415) 332-2344.

Clarion 3.0 to ship late; users remain patient

BY SCOTT MACE

The Clarion Professional Developer 3.0 DBMS will miss its March ship date — slipping to June at the latest — officials at Clarion Software confirmed last week. Clarion users, however, are convinced the product will be worth the wait.

Between 40 percent and 50 percent of Clarion's U.S. customers paid for the 3.0 upgrade after its announcement last fall in return for receiving priority status and $75 off the $250 upgrade price, according to Bob Shumate, company president.

Most users are not surprised by the delay and are content to wait it out.

"It's going to be such a fantastic product that to wait another three months is worthwhile," said Gerald Kahn, a consultant who heads the Clarion Users Group of New York. "For a product like this, [paying] $175 [in advance] is nothing."

The release is Clarion's most important product ever, Shumate said. "Even our customers told us, 'it's okay if it's late, just make sure it's right.' "

"This product is so big that it's taking a little longer than R&D had anticipated," Shumate said.

Bruce Barrington, Clarion chairman and chief engineer, is planning to send a letter to all who purchased an upgrade, letting them know of the delay, Shumate added.

Clarion's pay-in-advance upgrade offer is largely unknown outside the mainframe world; PC software companies typically take orders early but bill customers on the ship date.

"It cost a lot of money to build this product," Shumate said. "The option is usually that you go to the bank and get a loan. Bruce and I were talking one day, and we said, why are we paying the bank interest? Why don't we make a better deal for our customers?"

Clarion will not begin accepting new orders for the 3.0 upgrade until the product ships. Users who buy Clarion 2.1 within 60 days of 3.0's ship date will be able to upgrade at a discount, Shumate said.

Some things are clearly built for speed.



Hang on! At 17 pages per minute, the new HP LaserJet IIISi printer for the Macintosh runs full tilt. With a high-speed engine, more standard memory (5MB, expandable up to 17MB), and a RISC-based formatter, this printer can have your work finished faster than you can shout "the HP LaserJet IIISi for the Macintosh."

Designed specifically for high-volume printing, this machine comes with two 500-sheet input trays, a 500-sheet output capacity, and a 50,000-page-per-month duty cycle. In addition to quick turnarounds, you gain paper-handling versatility with job offset and a tray-full sensor. And for even greater flexibility, you have the option of adding two-sided printing and an envelope feeder.

What's more, our printer has true Adobe® PostScript® built in. Which means this machine whips through PostScript printing, while others may keep you waiting. So whether



Others aren't so obvious. Introducing the LaserJet IIISi for the Macintosh.



Works with LocalTalk and EtherTalk.

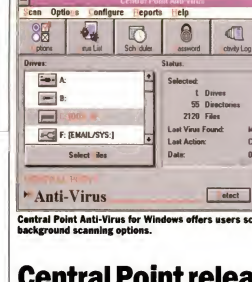
your workgroups are networked by LocalTalk, EtherTalk, or sharing files between both, simply plug in and they're ready to roll.

Perhaps the best news of all is the price. The HP LaserJet IIISi for the Macintosh is only $6,995.* So if you're interested in affordable, express printing with the service and reliability you've come to expect from Hewlett-Packard, call **1-800-752-0900, Ext. 2607** for the name of your nearest authorized HP dealer.† And discover the printer that will take your breath away.

LaserJet Printers

HEWLETT PACKARD

*Suggested U.S. list price. Adobe and PostScript are registered trademarks of Adobe Systems, Inc. in the United States and other countries. †In Canada call **1-800-387-3867, Ext. 2607**. © 1991 Hewlett-Packard Company PE21122



Central Point Anti-Virus for Windows offers users scheduled and background scanning options.

Central Point releases Windows virus buster

BY ED SCANNELL

Central Point Software Inc. has released a Windows version of its antivirus program that detects and cleans approximately 1,000 computer viruses.

Central Point Anti-Virus For Windows detects new and known stealth viruses, which conceal themselves from many antivirus programs by hiding file size changes and making other subtle changes to files.

The program is supposedly also able to cure systems infected with the Michelangelo virus. (See "Michelangelo: hype or threat?" March 2, page 1.)

One of the added features in the Windows version is scheduled scanning, which lets users schedule regular scans of their systems' hard drives.

The program also offers background scanning that lets users reduce the antivirus program to an icon on-screen while they continue working. When the scan is completed, a window pops up, giving users the compiled statistics of the scan.

As new viruses come along, users can update both detection and cleaning capabilities by downloading external files from either the Central Point Software bulletin board or CompuServe.

The program, scheduled to be available by month end, costs $129.

The company also introduced last week a new version of Backup for Windows. Version 7.2 features support for Windows 3.1, including the capability to drag and drop; additional tape support, including support of QIC 40/80 and Irwin drives; and increased virus detection.

Backup 7.2 for Windows costs $129 and will be available through dealers beginning in April.

In a third announcement, Central Point acquired Eikon Systems and will release Version 2.2 of that company's Scrapbook+ later this month.

The Windows-based utility provides users with visual storage management for graphics and text. New features include an art-file import filter for Microsoft Corp.'s Word For Windows 2.0.

Central Point Software Inc., in Beaverton, Oregon, can be reached at (503) 690-8090.

Word Finder Plus tops 1 million

Microlytics Inc.'s Word Finder Plus adds 780,000 words to the list of synonyms in Word Finder while using less space.

Word Finder Plus features a list of more than 1 million entries. Using disk-compression technology, the Macintosh version of Word Finder Plus fits into 290K of disk space.

"We've added a tremendous amount of additional synonyms in a little less space than the original Word Finder," said Kathy Schaeffer, retail software manager for Microlytics.

The Macintosh version of Word Finder Plus is now compatible with Apple's System 7.0, as well as System 6.0x. It is also compatible with most commercial word processors.

Word Finder Plus for the Mac sells for $69.95. Word Finder users may upgrade for $19.95. DOS and Windows versions are scheduled for release by the third quarter.

Microlytics, in Pittsford, New York, can be reached at (716) 248-9150.

— Lafe Low

Qmaps 2.1 adds upper memory

BY ED SCANNELL

Quadtel System Software Inc. has updated its memory management software to give users up to 64K more upper memory when coupled with the company's BIOS product.

Version 2.1 of Qmaps is capable of loading more programs into upper memory, thereby freeing up the conventional DOS memory. The program does so by taking advantage of a system's video text area, adding from 32K to 64K to upper memory.

Version 2.1 features an installation program that "raises the roof" on the traditional 640K barrier to 704K of memory when users work in VGA mode, according to a company official.

Qmaps 2.1 is now compatible with Microsoft Corp.'s Windows 3.0 and the upcoming Version 3.1. It is capable of automatically detecting which version of Windows is on a user's machine and configuring itself accordingly, according to a company official.

Other improvements in Version 2.1 include better mouse support, tighter compatibility with networking products from Novell and LANtastic, and more accurate chip set identification, which therefore cuts down on the CMOS problems occasionally found on some systems.

Registered users of the $99.95 Qmaps 2.0 can upgrade to Version 2.1 free until December 31 and will also receive free any upgrades delivered in that time.

Quadtel also lowered the price on Version 2.0 of Qmaps from $129.95 to $99.95. UmbPro, a product that allows protected-mode programs to run faster, was reduced from $89.95 to $79.95.

Quadtel System Software Inc., in Costa Mesa, California, can be reached at (714) 754-4422.

DeltaGraph offers advice on chart options

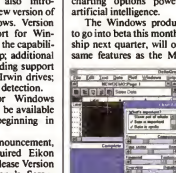
BY JEANETTE BORZO

DeltaPoint Inc. is bringing its Macintosh-based DeltaGraph Professional charting and presentation program over to Windows and adding automatic charting options powered by artificial intelligence.

The Windows product, due to go into beta this month and to ship next quarter, will offer the same features as the Mac version, as well as support for Object Linking and Embedding and Dynamic Data Exchange.

The product will sport a Chart Advisor feature that uses artificial intelligence to automatically select and plot the most appropriate chart type for user-selected data.

"It will come up with the chart type that makes the most sense given the data and the parameters you set," said DeltaPoint marketing director Mark Kaufman.



The Chart Advisor uses artificial intelligence to suggest the best chart types.

Users enter information on what is critical or unique to the data and can indicate the chart's audience. Chart Advisor then selects the most appropriate charting option and up to five alternates from the program's 40 types and 80 subtypes of charts. Users also have the option of selecting chart types manually.

DeltaGraph Professional for Windows will be able to import text and graphics from a number of programs in several formats.

The product also provides standard drawing tools, including a Bezier curve tool, a free-hand tool, and an eyedropper. A clip-art and chart library will offer chart templates specifying font, color, and style, as well as setting options for grids, ticks, and axes.

Slide-show capabilities will include a slide sorter, 32 transition effects, and a run-time version to distribute with presentations.

DeltaGraph Professional for Windows will cost $495. The company plans to integrate the Chart Advisor into the next upgrade of its Macintosh product.

DeltaPoint Inc., located in Monterey, California, can be reached at (408) 648-4000.

PC-File 6.5 adds relational update capability

BY STUART J. JOHNSTON

An updated version of ButtonWare's PC-File, which shipped last week, lets users post entries and calculations to other PC-File databases.

"We polled our user base, and the relational update [capability] was the most requested feature," said Megan O'Toole, a ButtonWare spokeswoman. "If you're updating your current database, you can post [the information] to fields in other databases by opening up a dialog box and saying where you want to post it," she added.

PC-File 6.5 also features speed improvements in the user interface and the capability to print 14 different bar-code formats on dot-matrix and laser printers, according to O'Toole.

Available in both single-user and LAN editions, PC-File 6.5 also adds query-by-example support; a pop-up calculator that can be used with file data; and a fast redefine option that lets users quickly change field names, edit masks, default and automatic data, and calculations.

Other additions include an updated set of integrated utilities for packing, repairing, and describing databases; the capability to customize screen colors; and a configurable table view that lets users choose which fields to display on-screen for easier editing.

The LAN edition supports true multiuser capability and also adds a network administrator feature that shows record and file locks, and provides information on database activities.

PC-File 6.5 costs $149.95 for the single-user edition and $449.95 for a LAN edition that supports up to five users. Registered users can upgrade for $49.95 for the single-user edition and $149.95 for registered users of the PC-File Network Pack.

ButtonWare, located in Bellevue, Washington, can be reached at (206) 454-0479 for more information.



Introducing Quattro Pro 4.0
The only DOS spreadsheet with pushbutton power!



Borland does it again— Sorry, Lotus!

No other DOS spreadsheet gets your work done faster than Borland's new Quattro® Pro 4.0 with pushbutton power!

Quattro Pro beats 1-2-3 . . . again!

New	Quattro Pro 4.0	Lotus 1-2-3 R 2.3	Lotus 1-2-3 R 3.1+
Most Powerful	**Yes**		
Intelligent Graphs	Yes	No	No
Novell Network optimized	Yes	No	No
Multiple sheets	Yes	No	Yes
Multi-variable solver	Yes	No	*
Easiest to Use	**Yes**		
SpeedBar	Yes	No	No
Print-To-Fit	Yes	*	*
Read Lotus 1-2-3 files, styles & macros	Yes	Yes	Yes
Best Performance	**Yes**		
All features in 640K	Yes	?	No
Price	$495	$495	$595

? Yes, but almost no room remains for data.
*Yes, but requires attaching an add-in.

Quattro Pro's customizable, built-in SpeedBar™ is a row of clearly labeled buttons that use simple English commands to give you instant mouse-click access to your frequently used features and macros.

NEW SpeedBar

Plus you get immediate access to a host of new features.

Intelligent Graphs let you perform extended analysis with your graphs without changing your data. And Quattro Pro's Optimizer™ allows you to solve complex problems using multiple variables.

NEW Intelligent Graphs

The best spreadsheet on networks

Only Quattro Pro 4.0 gives you superior Novell NetWare support, including automatic logon, drive mapping and a new Print Queue Manager.

NEW Novell Support

The most feature-packed DOS spreadsheet ever!

And in addition to Quattro Pro 4.0's dramatic new advances, you get the features that have made it the #1-rated spreadsheet in the world. Features such as WYSIWYG, Print-To-Fit™ spreadsheet output, superb 1-2-3® compatibility (you can even read Allways, Impress and WYSIWYG files) and more.

Top-rated spreadsheet Top-rated company

Quattro Pro has won more awards for technical excellence and customer satisfaction than any other DOS spreadsheet. And J.D. Power and Associates ranked Borland "best application software in customer satisfaction in Small to Medium-sized and Large Businesses."[1]

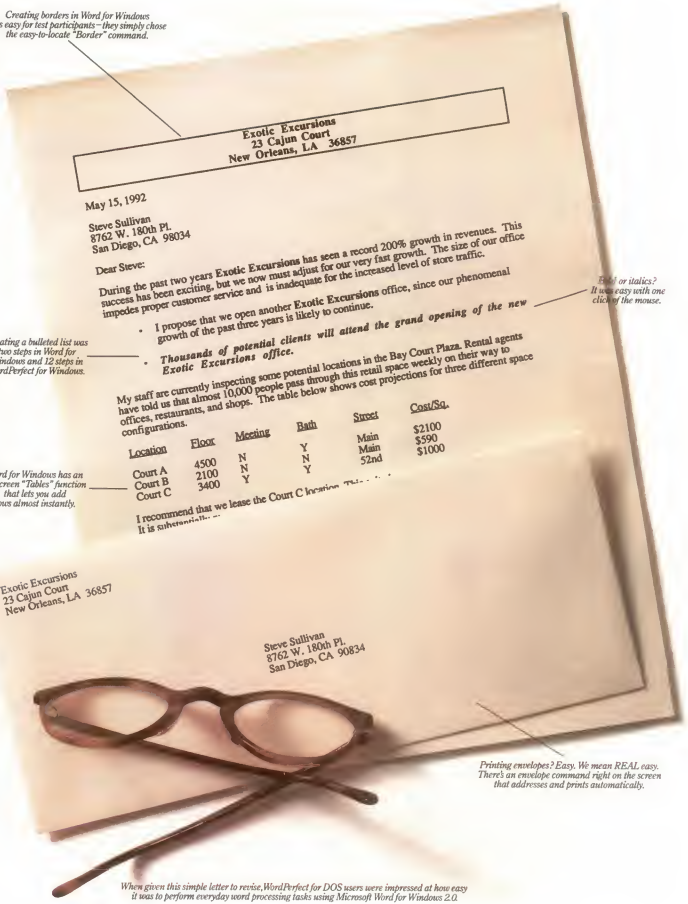
Now you know why more than one million people have upgraded to the power of today's spreadsheet. Quattro Pro.

Attention 1-2-3 users!
Step up now!
Special Upgrade offer
See your dealer today or call now, 1-800-331-0877, Dept. 5624

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Software Craftmanship

[1]1991 J.D. Power and Associates® Computer End User Satisfaction Study: Phases I and III: Small to Medium-sized Businesses (responses from 1,784 business sites with 1 to 499 employees) and Large Businesses (responses from 1,094 business sites with 500 or more employees).

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Creating borders in Word for Windows was easy for test participants – they simply chose the easy-to-locate "Border" command.

Exotic Excursions
23 Cajun Court
New Orleans, LA 36857

May 15, 1992

Steve Sullivan
8762 W. 180th Pl.
San Diego, CA 98034

Dear Steve:

During the past two years **Exotic Excursions** has seen a record 200% growth in revenues. This success has been exciting, but we now must adjust for our very fast growth. The size of our office impedes proper customer service and is inadequate for the increased level of store traffic.

- I propose that we open another **Exotic Excursions** office, since our phenomenal growth of the past three years is likely to continue.
- ***Thousands of potential clients will attend the grand opening of the new Exotic Excursions office.***

Bold or italics? It was easy with one click of the mouse.

Creating a bulleted list was two steps in Word for Windows and 12 steps in WordPerfect for Windows.

My staff are currently inspecting some potential locations in the Bay Court Plaza. Rental agents have told us that almost 10,000 people pass through this retail space weekly on their way to offices, restaurants, and shops. The table below shows cost projections for three different space configurations.

Location	Floor	Meeting	Bath	Street	Cost/Sq.
Court A	4500	N	Y	Main	$2100
Court B	2100	N	N	Main	$590
Court C	3400	Y	Y	52nd	$1000

Word for Windows has an on-screen "Tables" function that lets you add rows almost instantly.

I recommend that we lease the Court C location. This [illegible]
It is substantially [illegible]

Exotic Excursions
23 Cajun Court
New Orleans, LA 36857

Steve Sullivan
8762 W. 180th Pl.
San Diego, CA 90834

Printing envelopes? Easy. We mean REAL easy. There's an envelope command right on the screen that addresses and prints automatically.

When given this simple letter to revise, WordPerfect for DOS users were impressed at how easy it was to perform everyday word processing tasks using Microsoft Word for Windows 2.0.

No wonder WordPerfect users prefer Word for Windows. It has easy written all over it.



In a recent test conducted by the National Software Testing Labs (NSTL), nearly eight out of 10 WordPerfect® for DOS users preferred Microsoft® Word for Windows™ 2.0 over WordPerfect for Windows. The reasons were plenty.

They were amazed at how Word for Windows put them one step away from accomplishing everyday word processing tasks with, in many cases, one simple click of the mouse. Which may have surprised them. But it didn't surprise us. After all, we designed Word for Windows around them.

Every week during the development of Word for Windows, we invited WordPerfect users to bring in their letters, memos, or whatever business documents they use in their own jobs, and try them out using Word for Windows. Our Product Development people at Microsoft called these sessions "usability studies." Which is just a fancy, shorter way of saying "what-do-people-use-a-word-processor-for-and-how-can-we-make-it-easier-for-them-to-use-it."

These studies not only helped us to design features that make everyday tasks easier, but helped us to make the more advanced word processing features like grammar checking, drawing and charting, easier to use as well.

See for yourself why nearly eight out of 10 WordPerfect users preferred Word for Windows, and take advantage of our special $129 offer,* by calling (800) 323-3577, Dept. Y73. If, for any reason, you're not completely satisfied with Word for Windows 2.0, we'll gladly return your purchase in full.** If you'd like, we'll also send you the files you need to test Word yourself. Then you, too, can have the last word on ease.

Microsoft

*Offer good for current licensees of WordPerfect, MultiMate,® WordStar,® MS® Word for MS-DOS® and DisplayWrite.® Please allow 2-4 weeks for delivery upon receipt of order by Microsoft. Offer expires 6/30/92. Limit one per customer. Reseller prices may vary. Call for system requirements. **If you're not satisfied with Word for any reason, return the product to Microsoft within 90 days with proof of purchase for a full refund. Offer good only in the 50 United States. To receive only the NSTL test results in the United States, call (800) 323-3577, Dept. Y73. For information only: In Canada, call (800) 563-9048; outside the U.S. and Canada, call (206) 936-8661. © 1992 Microsoft Corporation. All rights reserved. Printed in the USA. Microsoft, MS, and MS-DOS are registered trademarks and Windows is a trademark of Microsoft Corporation. WordPerfect is a registered trademark of WordPerfect Corp.

DEC VT340 emulator ships for Windows

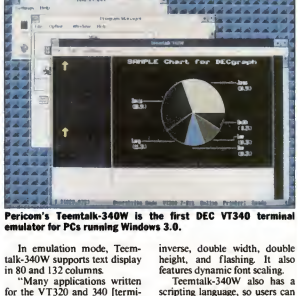
By Lafe Low

Pericom Inc. has delivered its Teemtalk-340W terminal emulation package that lets PC users running Windows 3.0 emulate the DEC VT340.

Teemtalk-340W supports a range of emulation capabilities, including DEC VT320, VT52, HP 2622A, HP 2392, DG200, and Viewdata alphanumeric emulation. It also supports DEC VT340, Retrographics VT640, and Westward 2119 graphics emulation.

"There are separate terminal emulation capabilities for customers that have multiple host computers in-house," said Barry Brown, Pericom's vice president of sales and marketing. "One minute you might need VT340 emulation and the next you may need HP 3000."

Teemtalk-340W is fully compatible with Windows 3.0 and also will support the upcoming Windows 3.1.



Pericom's Teemtalk-340W is the first DEC VT340 terminal emulator for PCs running Windows 3.0.

In emulation mode, Teemtalk-340W supports text display in 80 and 132 columns.

"Many applications written for the VT320 and 340 [terminals] offer fixed terminal display, written around 80 [columns] by 24 [rows]," Brown said. "When you resize a window within Windows, [Teemtalk] will dynamically resize the fonts, so you won't lose any data within that window."

Teemtalk-340W can display text in boldface, underlined, inverse, double width, double height, and flashing. It also features dynamic font scaling.

Teemtalk-340W also has a scripting language, so users can automate such procedures as logging on, transferring files, and other file management tasks.

Teemtalk-340W will retail for $449. The product is available until May 1 for an introductory price of $199.

Pericom Inc., in Lawrenceville, New Jersey, can be reached at (609) 895-0404.

Action Plus contact manager update ships

By Lafe Low

Action Plus Software is shipping an upgrade of its contact management package that features a streamlined user interface and an enhanced electronic mail module.

Action Plus, Version 5.0 also provides 15 programs that users can run in TSR mode from within Action Plus.

"We consider it a business operating system," said Skip Weeks, Action Plus' president. "It is to businesses as DOS is to computers. It's become an environment you can go into and not leave all day."

The user interface in Version 5.0 has been updated to include pull-down menus and user-definable fields. "It has a Windows-type look to the interface," Weeks said.

Action Plus is working on a true Windows version of Action Plus, which is scheduled for release early in the second quarter, according to Weeks.

The E-mail module in Action Plus now features message classification, the capability to send messages to a group of users, and a built-in spelling checker. Action Plus can now handle up to 10,000 users on a network.

The searching interface has also been enhanced in Version 5.0. Search speed has been improved with the addition of user-definable indexes. "Just start typing a name and it interactively zooms to that portion of the database," Weeks said.

Other features in Version 5.0 include an integrated inventory module that allows for serial number tracking and a calendar-scheduling feature designed to work with the DayTimer and Franklin Planner time-management systems.

Users can also attach up to 50 photographs or PCX files to any profile record.

Version 5.0 also includes a file conversion utility for importing data from any dBase-compatible file.

"Our No. 1 requirement was ease of operation and learning," said Kent Ekstrom, president of The Training Alliance. "Action Plus is ideal for that," he said.

Action Plus, Version 5.0 is now shipping for $495 in a single-user version and $1,495 in the network-server version. Upgrades to the new version are $79 and $199, respectively.

The product ships with a training video to bring users up to speed on the new functions. The training video costs $29.95 when purchased with an upgrade.

Action Plus Software, in Salt Lake City, can be reached at (801) 255-0600.

Filter solves PageMaker import woes

By Jeanette Borzo

A host of products have been introduced to complement Aldus Corp.'s PageMaker 4.2, including a new filter for importing Word 5.0 documents.

Aldus created the filter for Microsoft Word documents in response to problems PageMaker users reported when importing Word 5.0 documents.

The Word filter is available free from Aldus and Microsoft. Users can contact Aldus through CompuServe or call Microsoft product support ([206] 635-7200) or customer service ([800] 426-9400).

PageMaker users who have UserLand Software Inc.'s Frontier 1.0, a scripting program that lets users automate Macintosh functions, can use a new Frontier install file to drive PageMaker functions.

Available on CompuServe (GO USERLAND, Library 9 or GO SBSALD, Library 6), the install file lets PageMaker users save time by programming more than 230 PageMaker operations. It also makes it possible for untrained personnel to perform page layout tasks.

UserLand Software, in Palo Alto, California, is shipping Frontier 1.0 for $249.

Equilibrium is shipping Rotate This and Import That. The $149 Rotate This can rotate bitmapped graphics in PageMaker at any increment. Import That, also $149, imports graphics into PageMaker in a wide variety of file formats on Macintosh, DOS, Windows, and Amiga computers.

Both Aldus Addition programs offer on-line help. They can be purchased together for $175.

TruMatch Inc. plans to ship next month the TruMatch 4-Color Selector for PageMaker users who want to assure accurate color results.

The $49 Aldus Addition software guarantees its color results by electronically selecting and outputting four-color percentages with targets rounded off to 1 percent.

The New York-based TruMatch can be reached at (212) 351-2360.

Seattle-based Aldus Corp. can be reached at (206) 628-2320.

Equilibrium, in Sausalito, California, can be reached at (800) 524-8651.

Hijaak for Windows supports viewing, converting graphics

By Mark Brownstein

Inset Systems Inc. has announced a graphics utility for Windows that lets users view, translate, capture, enhance, and print images.

Hijaak for Windows 1.0 supports viewing and conversion within 60 different graphics formats, the company said.



Hijaak for Windows 1.0 supports viewing and conversion within 60 graphics formats.

The product provides fixed or variable color palettes to provide accurate viewing of images that contain more colors than a system's hardware can display.

Hijaak supports Object Linking and Embedding, and Windows capture capabilities let users select specified areas, the entire screen, or window objects. Captured images can be saved to the clipboard, a file, a window, or any supported file format.

Hijaak's image editing tools allow for cropping, image rotation in one-degree increments, gray-scale and color remapping, and font remapping with TrueType support.

Hijaak for Windows will sell for $249. Registered users of other Hijaak 2.x products may upgrade for $60. The product is set to ship in April.

Inset Systems Inc., in Brookfield, Connecticut, can be reached at (203) 740-2400.

Contact manager for HP 95LX announced

By Yvonne Lee

Contact Software International Inc. will announce today a version of its Act contact management software for Hewlett-Packard Co.'s 95LX palmtop computer.

Act for the HP 95LX has a "Zapcards" feature that allows users to exchange data between two palmtop computers using the machines' infrared link. Users are able to exchange individual contacts or groups of contacts.

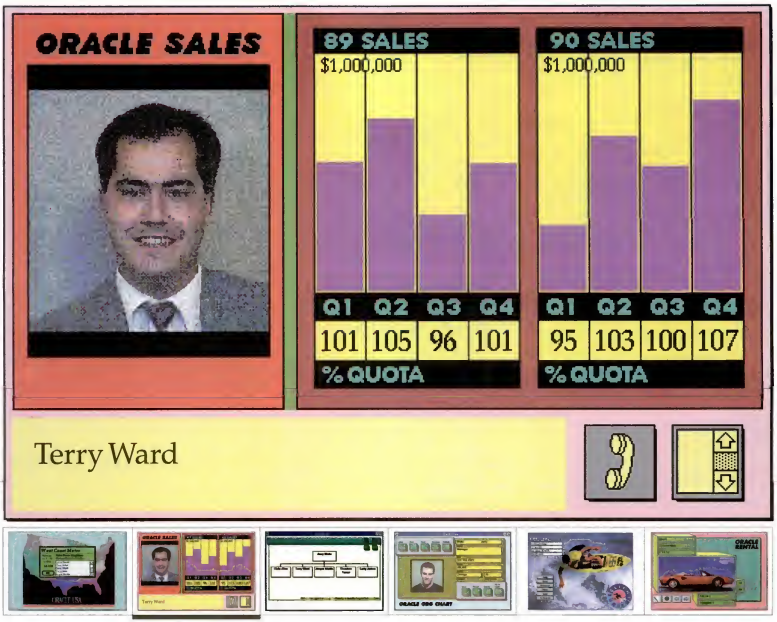
The program lets users enter contact data on the 95LX and later transfer the updated material to their desktop computer using the included connectivity cable.

The HP 95LX version of Act limits the notes and history that can be listed with individual contacts to 4K; the full version of Act 2.1 offers unlimited notes and history.

Other differences between the two versions are that the HP 95LX version will not compress data, does not contain integrated word processing, does not allow users to save queries, and limits users to a maximum of 4,000 records.

Act for the HP 95LX is available now for $149.

Contact Software International Inc., in Carrollton, Texas, can be reached at (214) 919-9500.



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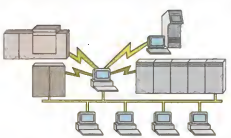
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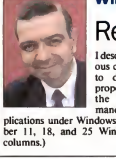
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Window Manager / Brian Livingston

Readers fine-tune their DOS performance under Windows

I described in previous columns a way to determine the proper settings for the best performance of DOS applications under Windows. (See November 11, 18, and 25 Window Manager columns.)

Several readers wrote that they had tried the Loop1 and Loop2 batch files I provided for testing. The main purpose of these batch files was to experiment with the setting MinTimeslice=20, which you may place in the [386Enh] section of your SYSTEM.INI file.

This setting controls the length of time, in milliseconds, that Windows processes a DOS session before moving on.Io give a CPU time slice to some other activity. My belief is that a setting of 20 milliseconds (one-fiftieth of a second) is too long for machines faster than 16 MHz. On the 33-MHz system I use, a setting of 5 gives the best performance.

The optimum setting obtained by readers varied from 25 down to 5. But the majority of responses indicated that a setting of 5 or 10 was the best overall for most 386 and 486 systems.

Some readers worried that they weren't able to get the batch files to produce as many loops on their system as I seemed to be getting on my 386/33. I wouldn't worry about the absolute number of loops. These batch files were developed only to test performance within a single system, not to compare the performance of two different PCs.

Loop1 and Loop2 do nothing except write a line to the screen and a line to a disk file, repeatedly. As such, they test nothing but the speed of your video BIOS and the speed of disk writes to a single sector. Windows does not use the video BIOS (it writes direct to video RAM). Nor do most Windows applications write to disk a single sector at a time.

You should add some meaningful operation to these batch files and time them again on your system, to determine the best setting.

One person did find a setting that significantly improved his DOS performance. He changed VirtualHDIRQ=on to VirtualHDIRQ=off in the [386Enh] section of his SYSTEM.INI file. This keeps Windows from "virtualizing" (managing) the hard disk interrupt request line, so Windows is forced to access the hard disk through the system BIOS.

This change doubled the number of loops the reader was able to perform in his DOS sessions. One reason is that he was using Multisoft's PC-Kwik disk cache instead of SmartDrive. The PC-Kwik documentation states that Virtual HDIRQ=off should be added to SYSTEM.INI so disk access can be cached by the utility.

You can add VirtualHDIRQ=off in the [386Enh] section of your SYSTEM.INI if you want to test its impact on your system's performance. But if a statement like this already appears in your SYSTEM.INI, don't blithely change it to VirtualHDIRQ=on. Some disk drivers aren't compatible with Windows' virtualization, and they may have written this line into your SYSTEM.INI for a reason.

Another trick that improves the performance of windowed DOS sessions, as I described in my November 18 column, is to place the statement WindowUpdate Time=200 in the [386Enh] section of your SYSTEM.INI file. This increases the priority Windows uses to refresh windowed DOS sessions from the default of 50 up to any value you desire (maximum 999). Because a setting of 200 gives the same performance as 999 on every system I've tested, I use 200 — but your system might have different results. You can easily test this by typing Dir over and over in a windowed DOS session and timing it under different settings. The lack of this setting (which allows Windows to use the default) can make a big difference in the results of Loop1 and Loop2.

As always, I'm interested to receive messages on your findings about improving Windows performance and other tweaks. Good hunting!

Brian Livingston is president of Windows Consulting and author of Windows 3 Secrets (IDG Books, San Mateo, California). Send comments to MCI 420-0583.

The Pros Rate CA-SuperCalc Higher Than Lotus 1-2-3 And Microsoft Excel.

...Loden, president of Microsoft reseller Loden ... built-in defaults." Computer Associates out- ... Computer Associates and Lotus Products, say ... no results both

VARBUSINESS
Spreadsheet Report Card

	CA-SuperCalc	Lotus 1-2-3	Microsoft Excel
Ease of use	7.30	6.50	7.33
Memory Requirement	7.00	5.41	6.34
Ease of programming	5.48	5.86	5.25
Ability to manipulate data	7.31	5.73	7.00
Sorting capabilities	7.50	5.64	5.68
Provision for software security	5.96	5.25	5.10
Report writing capabilities	5.76	5.33	5.17
Ease of use of interface	7.48	6.39	6.77
Software integration capabilities	7.30	6.23	6.75
Ease of data retrieval	7.50	5.75	7.00
Satisfaction with product profitability	5.51	5.75	5.42
Overall quality of product	7.70	7.18	7.53
Provision for customer support	7.52	5.79	5.22
Charges for training time	5.43	5.60	5.71
Provision for technical support	7.34	5.55	5.95
Provision for marketing support	5.68	5.71	5.93
Documentation & product information	5.90	6.70	5.96
Frequency of updates & revisions	5.59	5.75	5.15
OVERALL AVERAGE	7.09	6.05	6.44

Recently, *VARBUSINESS* conducted a survey of some people who know more about spreadsheets than anyone.

The people who sell, install, and support them for a living. The survey asked hundreds of spreadsheet dealers and resellers all kinds of questions to find out what the pros rate as the best spreadsheet. And the pros told them. CA-SuperCalc.*

In virtually every category from ease-of-use to technical support, CA-SuperCalc was rated higher than Lotus* 1-2-3* and Microsoft* Excel.

We're not surprised. While Lotus and Microsoft have been fussing over their many different spreadsheet versions, we've been stuffing one spreadsheet, CA-SuperCalc, with everything you would ever want. From spreadsheet linking to 3-D graphics and beautiful, presentation-quality output.

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This kind of performance is the result of combining two powerful innovations. Namely, a RISC-based controller, for quicker rendering of fonts and graphics, and PostScript* Level 2, an advanced printing language that delivers PostScript's vast graphic capabilities faster than ever before.

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11″ x 17″ Laser Printer Market Snapshot

SPECIFICATIONS

Manufacturer/Model	Resolution (DPI)	Speed	(PPM)/Processor	Page Description Language	List Price
Dataproducts LZR 1560	**300x300 OR 400x400**	**15**	**Weitek 8200 RISC**	**Adobe PostScript Level 2 & PCL4**	**$5,695**
QMS PS2210	300x300	20	Motorola 68020	Adobe PostScript	$9,995
LaserMaster 400XL	400x400	20	None	Microsoft TrueImage	$9,995
Varityper VT600W	600x600	7	Motorola 68020	Adobe PostScript	$16,995
DEC PrintServer 20	300x300	20	N/A	Adobe PostScript	$25,247
ATI LC6020	300x300	20	Motorola 68020	ATI LaserDrive & PostScript	$15,995

300x300 400x400

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400 dpi offers greater halftone range and sharper images than standard 300 dpi.



You'll still have a desk to work on too, since the LZR 1560 is the smallest 11″x 17″ printer available. And with one, two or three paper input tray models available, even your biggest jobs are handled easily.

So call **1-800-334-3174** for the name of your nearest Dataproducts dealer. And discover why the LZR 1560 is the only way to fly.

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Server card expands LaserJet's LAN reach

ASP Computer Products Inc.'s JetLAN print server card allows Hewlett-Packard LaserJet printers to be connected anywhere on twisted-pair or thin-wire Ethernet running NetWare, eliminating the need to connect LaserJet printers directly to the server. It supports up to 40 print queues on up to eight file servers. JetLAN comes in two models: the JL100 features a BNC connection and supports thin-wire; the JL200 comes with an RJ45 connection for twisted-pair support. Both models retail for $595. (800) 952-6277.

•••

Chromagrafx Imaging Systems Inc.'s $4,495 GammaScan 2.0 software gives Next users access to Optronics Colorgetter and Colorgetter Plus scanners for color graphics publishers and their prepress services. The software allows users to preview color values on-screen and make global or local color corrections before the scan. It provides user-adjustable gamma curves and filters. (516) 273-5708.

ANNOUNCED

Sun beefs up support program, cuts price

Sun Microsystems Computer Corp. last week beefed up its reseller service program with two new support programs and enhancements to existing ones, including price cuts on repair services. The new programs, SunSupportLine and SunSupportLine Plus, authorizes value added retailers to offer end-users unlimited telephone support for system software running on Sun workstations and servers. (415) 960-1300.

•••

Hewlett-Packard Co. last week announced changes to its existing CD ROM support program for its workstation customers. The company said it has simplified and improved the user interface of its document-retrieval service. It has also added navigational tools to the service. For a limited time, customers with workstation support contracts can get a free SCSI CD ROM drive worth $1,300 when they sign up for HP's CD ROM services and purchase the HP-UX CD ROM starter kit. The kit has a suggested price of $840. (800) 752-0900.

Chips hit with patent lawsuit

Intel says Chips & Technologies' 386 designs infringe on its patents

BY YVONNE LEE

A hearing is set for today in a patent infringement suit Intel Corp. filed last week against Chips & Technologies, according to Joseph Sawyer, Chips & Technologies assistant general counsel.

The suit was filed less than a week after an arbitrator granted Advanced Micro Devices the right to sell clones of Intel 386 microprocessors.

Last week's suit, filed in the Federal District Court of Northern California, claims that Chips violated five Intel patents in its Super386, Super386 DX, Super386 SX, 38600DX, 38600SX, 38605SX, and PC/Chip products, all of which were introduced last year. In a second complaint, Intel said that Chips' math coprocessors also violated a group of Intel patents.

Intel asked for injunctions prohibiting the further development and sale of the Chips processors. It has also asked for a restraining order preventing Chips from passing its 386 technology to another company.

"We've got one company that has infringed our patents, and we don't want it to go any further than that," said Michele Bourdon, an Intel spokeswoman.

Analysts at the Chips & Technologies press conference last week said Intel might have made this move to prevent Chips from gaining the protection of having the chips manufactured by Texas Instruments, which has a patent cross-licensing agreement with Intel. Chips & Technologies designs but does not manufacture chips.

Texas Instruments said it could still manufacture the Chips & Technologies designs.

"We can fulfill our manufacturing agreement with Chips consistent with our cross-licensing agreement with Intel," said Terry West, manager of media relations. "We are covered under Intel's patents, and the two [agreements] are not in conflict."

A decision on the temporary restraining order is expected today, according to Sawyer.

Chips & Technologies officials said they were surprised by the suit, because they had been informing Intel of their development and methodology to ensure that the company did not infringe on any patents.

"I explained to Intel what we were going to introduce and our methodology. Somewhere in the middle of all this, Intel decided to sue. We're still trying to understand what their goal is," said Gordon Campbell, Chips president. Chips built its technology from scratch, and none of the microcode was shared between the Intel and Chips products, Campbell said.

Intel's Bourdon said the two companies were still in discussions that could lead to a settlement.

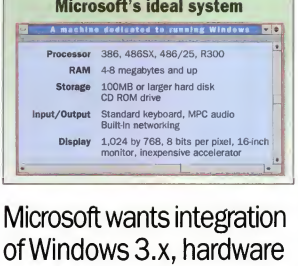
"We're still working with them," she said, "[but] because we're still in negotiation with them, a lot of our information is still private."

Intel lawyers were not available to comment on the suit.

— Cate Corcoran contributed to this story.



Chips president Gordon Campbell expressed surprise when Intel sued his company.



Microsoft wants integration of Windows 3.x, hardware

BY YVONNE LEE

SAN FRANCISCO — Microsoft Corp. billed its first hardware development conference held here last week as an effort to help hardware manufacturers develop machines that run Windows. But many of the attendees saw the effort as one to get companies to develop higher end machines to exploit new graphics features in the operating system.

Several attendees believed Microsoft wants developers to introduce computers with high-end audio and graphics.

"They want to convince hardware developers that this is the new minimum configuration," said Stephen Cottingham, manager of advanced development at NCR Corp.'s workstation products division.

Jonathan Lazarus, general manager of systems marketing at Microsoft, said the conference was to support hardware developers who want their products to run Windows. "The concept of IBM PC compatibility is out of date," he said. "People are now going to build Windows systems."

At the keynote, Nathan Myhrvold, Microsoft vice presi-

See WINDOWS, page 30

Kodak announces small ink-jet printer

Size will appeal to mobile users

BY TORSTEN BUSSE

Eastman Kodak Co. last week introduced an ink-jet printer designed for office, home, and mobile users.

At 5.6 pounds — 5.9 with batteries — and with a footprint the size of an 8½-by-11-inch sheet of paper, the Diconix 701 offers a compact design, suitable for the mobile user who has a need for printing away from home or the office, said Ed Lee, director of marketing at Kodak.

"At the same time it offers powerful desktop printing capabilities," Lee said.

It prints 3 pages per minute (ppm) in draft and 2 ppm in quality mode at a resolution of 300 by 300 dots per inch.

The Diconix 701 features a built-in sheet feeder that holds up to 30 pages of paper or transparencies, Hewlett-Packard DeskJet and IBM Proprint X24E emulation, and a Centronics parallel interface, according to the company.

The internal buffer has a capacity of 23K with 20K available to download fonts.

In addition, the printer allows for internal font rotation, which eliminates the need to buy or store landscape fonts by allowing users to rotate portrait-oriented fonts stored in the printer into landscape mode.

The Diconix 701's print modes and characters include bold, italic, superscript, subscript, underline, highlighting, Courier, Helvetica, Gothic, and an ASCII character and symbol set.

The DOS-compatible printer ships with a Windows driver. The company is currently investigating whether to offer a Macintosh-compatible machine in the future, Lee said.

Optional rechargeable batteries are available. They provide up to 50 minutes of continuous printing or 100 pages in quality mode.

The replaceable print heads are priced at $29.95 each and have a life of 800 draft or 400 quality pages.

Available at the end of the month, the Diconix 701 retails at $549.

Eastman Kodak is in Rochester, New York, and can be reached at (800) 344-0006.

Leading Edge unveils 80486s

Modular systems increase price pressure on high end

By Ed Scannell

Leading Edge Products Inc. did its bit to add pricing pressure to the 80486 market last week by unveiling two modular 80486-based systems priced at less than $2,900.

The D4/SX-20 and D4/33 systems support Intel Corp.'s recently announced clock-doubler chips. Users of the 20-MHz 486SX-based D4/SX 20 can upgrade to the 33-MHz 486DX-based D4/33 simply by removing one chip and adding another.

Using a modular chassis, the D4/SX-20's cache, video memory, and standard memory can be as easily upgraded to better match an upgraded processor, providing better overall system performance, a Leading Edge spokesman said.

The systems' more advanced features include a 64K cache, upgradable to 256K, and a Super VGA video controller with 512K of video memory, upgradable to 1 megabyte. Both systems can display resolutions up to 1,024 by 768.

"We tried to produce a system that was affordable to the masses," said Steve Elia, Leading Edge's director of product development. "We have a system that is painless to upgrade."

The D4/SX-20's base configuration includes 4 megabytes of main memory, upgradable to 32; a 120-megabyte hard drive; a 64K cache; 5¼-inch floppy drive; three additional drive bays; and a VGA controller. It is bundled with Microsoft's DOS 5.0, Windows 3.0, and Microsoft Works. It costs $2,499.

The D4/33, priced at $2,899, has the same base configuration as the D4/SX-20, with the addition of an integrated 487 math coprocessor. It will be targeted to graphics and engineering users.

Both systems are available immediately.

Leading Edge Products Inc., in Westborough, Massachusetts, can be reached at (508) 836-4800.



Leading Edge announced modular 80486-based systems priced under $2,900.

WINDOWS / from page 29

Microsoft wants hardware integration

dent of advanced technology and business development, said hardware vendors would be able to differentiate their machines as Windows device drivers, making it possible to integrate new kinds of storage devices, peripherals, audio, and graphics.

He said the mainstream desktop would include at least a 386 microprocessor, 4 megabytes of RAM, 100 megabytes of hard disk storage, a CD ROM drive, MPC audio, a graphics accelerator, and a 16-inch 1,024-by-768 resolution display. High-end machines would run off 50-MHz 486s and include 32 megabytes of RAM and a 300-megabyte hard drive.

Hardware designers are divided over how much they want to stick their necks out with new equipment.

On one hand, the new multimedia and storage devices are more expensive, and hardware manufacturers say they don't want to risk putting out more expensive products that may not catch on in the marketplace.

"From NCR, there's a reluctance to put in all this stuff," Cottingham said. "Customers want you to add new things, but they want it for free." However, customers will not know the benefits of new technology until systems are introduced with that technology built in, he added.

Windows will allow hardware vendors to differentiate their machines and introduce new capabilities previously reserved for specific applications, attendees said.

"The hardware people realize that Windows is helping drive demand for big new screens and faster graphics, so we want to work with Microsoft," said Thomas Ryan, executive director of the Video Electronics Standards Association.

"What's real clear is that the PC of tomorrow is a Windows-compatible PC, rather than an IBM-compatible PC," said Doug Crawford, systems engineering manager for computer video products at Texas Instruments, in Stafford, Texas.

"You can't do something different and be compatible with a 10-year-old standard. What Windows has allowed is using our [high-end graphics chip set] in general-purpose applications. You don't have to be an AutoCAD nerd. Windows brings it to the masses," Crawford said.



Compaq hopes QVision will boost image

By Tom Quinlan

Following a well-publicized move toward producing more affordable systems, Compaq Computer Corp. wants to show the world and its customers it is still committed to being a technology leader.

As an indication of its continuing commitment to innovation, Compaq's most recent announcements included a new Windows accelerator product capable of supporting a screen resolution of 1,024 by 768 pixels and a 17-inch, flat-screen monitor with a dot pitch of .25 millimeters.

The QVision products include graphics controllers and monitors, with the graphics controllers priced at $600.

The 17-inch monitor lists for $1,299.

In addition to the graphics products, which include an EISA and an ISA version of the QVision graphics controllers and a 15-inch flat tension mask monitor, Compaq introduced its DeskPro 50/m last week, a modular computer that uses Intel Corp.'s 25/50-MHz speed-doubling chip and costs less than $5,000.

"Our customers have told us that they want innovation from Compaq," said Steve Malisewski, director of desktop marketing for Compaq.

"They told us that if they wanted just another clone, they would buy just another clone."

"I think a lot of people misunderstood what Compaq's message was when we said we would make a more affordable system," Malisewski added.

"That didn't mean that we wouldn't be innovators any more, just that we would target the technologies we improved upon more carefully."

"It's incredible that we're able to introduce this product at this price point," said Rod Schrock, director of systems product marketing. "It indicates that we've achieved our objective of introducing innovative technology at a competitive price."

"I think these products go a long way toward demonstrating Compaq's commitment to technical innovation," Malisewski said.



Compaq's QVision products include graphics controllers and monitors.

"I get asked a lot, 'When are you guys going to introduce the systems that [Compaq president and chairman Eckhardt Pfeiffer talked about?' " Malisewski added.

"These products are exactly what Pfeiffer was talking about."

For more information about Compaq products, contact an authorized Compaq reseller.

Twinhead to introduce three slim notebooks

By Yvonne Lee

Twinhead Corp. plans to introduce three high-end notebooks at Lap & Palmtop '92 in New York today.

The Slimnotes all measure 8½ by 11 inches and weigh 5.8 pounds. The Slimnote 486DX/33 and 486SX include an 80-megabyte hard disk and 4 megabytes of RAM, expandable to 16 megabytes by inserting proprietary memory modules, which the company says users can install. The 386SXL/25 comes with a 60-megabyte hard disk and a minimum of 2 megabytes of RAM, expandable to 6 megabytes. All models include a 1.44-megabyte 3½-inch floppy drive and DOS 5.0.

Information on the 10-inch, 64-gray-scale VGA display can be simultaneously shown on an external Super VGA screen using a Cirrus Logic chip set that adjusts the video between the two screens.

A side panel slides off, allowing users to install an optional $129 trackball. This panel also houses the memory modules and a slot for an internal fax/modem. The $3,499 486DX/33 and the $2,999 486SX/20 are built around Intel processors. The $2,399 386SXL/25 is built around an AMD 386SXL microprocessor and has a socket for a 387 math coprocessor.



Twinhead Corp.'s Slimnote 486DX/33 offers an optional trackball.

All Slimnote notebooks are available now.

Twinhead is based in Taiwan. Its U.S. headquarters is located in Milpitas, California, and can be reached at (800) 545-8946.

eminder That We've

Seagate unveils low-profile hard drive

BY TOM QUINLAN

Seagate Technology Inc. has introduced a low-profile 65½-megabyte hard drive 12½mm high.

The drive, the ST9080A, will be introduced this week at the CeBit trade show, in Hannover, Germany.

The ST9080A weighs 4.8 ounces and features an average access time of 16 milliseconds. The drive also comes with 88-bit error correction code and a mean time between failure rate of 150,000 hours.

Seagate introduced its first 12½mm drive last year with the ST9052A, a 42-megabyte drive.

The drive also comes with user programmable power management to help conserve battery life, with support for several modes.

Last week, Seagate also introduced a 3½-inch hard drive with a 214-megabyte capacity that is also equipped with power management functionality.

The 214-megabyte drive, the ST3243A, has an average access time of 16 milliseconds. The drive comes with a 128K cache buffer.

Seagate's ST3243A is available now in evaluation quantities and is scheduled to start shipping in the second quarter.

The company expects to start shipping evaluation units of the 12½-millisecond 2½-inch drive in the second quarter, with volume shipping slated to start in the third quarter.

Seagate Technology Inc., in Scotts Valley, California, can be reached at (408) 438-6550.

Radius accelerator board boosts speed of Mac II line

Radius Inc. last week started shipping a Mac accelerator board based on Motorola Inc.'s new 33-MHz 68040 chip.

The Radius Rocket 33 is aimed at Mac users who need high performance for applications such as graphic design and desktop publishing.

The board runs at 29 million instructions per second (MIPS), said Radius. It works with Nu-Bus-based systems, such as the Mac II, IIx, and IIci. Adding the Rocket 33 to a Mac II makes it 40 percent to 65 percent faster. An accelerated Mac II is also 32 percent faster than a Quadra, Apple's high-end model.

The Rocket 33 comes with RocketWare software for compatibility between the board and Mac systems.

The Rocket 33 is priced at $2,499. It will ship in quantity at month end, Radius said. Radius also makes 25-MHz accelerator boards, which range in price from $1,499 to 1,999.

Radius Inc., in San Jose, California, is at (408) 434-1010.

— Cate Corcoran

Three users can share Epson's EPL-8000

BY TORSTEN BUSSE

Epson America Inc.'s 10-page-per-minute laser printer can be shared by three non-networked PC users at the same time, the company said.

The EPL-8000 comes standard with two parallel ports for direct connection of two PCs. The printer automatically accepts print jobs from either interface without control panel changes, the company said. An optional third interface allows for connection to a third PC.

Each interface may be assigned a page-description language that may be either Hewlett-Packard Co.'s PCL 5 or Epson's FX or LQ languages.

Optional identity cards provide HPGL plotter emulation or true Adobe PostScript. With a PostScript card installed, the printer switches automatically between PCL 5 and PostScript languages.

Print quality is 300-by-300 dots per inch. The EPL-8000 includes a paper tray for 250 sheets of paper, 14 bit-mapped fonts, and 13 scalable fonts. A cartridge slot allows users to install additional HP-compatible fonts. The Epson EPL-8000 ships with 1 megabyte of RAM expandable to 2 megabytes.

The EPL-8000 retails for $1,999. The optional parallel or serial port is $152. PostScript cards will retail for $649.

System ships DEC storage

System Industries of Milpitas, California, has delivered tape and optical storage subsystems designed to work within Digital Equipment Corp.'s DSSI storage architecture.

The SIDI/Laser's Edge is a 33-gigabyte rewritable optical storage subsystem. The SIDI/SI8500D is an 8mm tape subsystem providing 5 gigabytes of storage without data compression, which expands the base storage and the SIDI (System Industries DSSI Interconnect) subsystems available on DSSI nodes.

The SIDI/Laser's Edge subsystems are priced starting at $70,150. The SIDI/SI8500D subsystems start at $11,500, which includes the data compression utilities.

— Lafe Low



NEC offers 486SX laptop with active-matrix monitor

BY YVONNE LEE

NEC Technologies Inc. last week introduced the first laptop with an 800-by-600 active-matrix display.

The AC-powered 16.7-pound ProSpeed 486SX is a high-resolution monochrome version of the ProSpeed 486SX/C introduced last June. The 486SX/C displays at 640 by 480 pixels. The company would not say whether a Super VGA color version was in the works.

The computer's 10.4-inch Super VGA display gives users one-third more information on the screen than the VGA displays offered on other notebooks. This could be useful for CAD/CAM applications, presentations, or for viewing multiwindowed environments, the company said. The ProSpeed 486SX shows 16 levels of gray.

The computer also has features that approach a desktop computer's speed and expandability. The 20-MHz 486 processor effectively runs faster because of an 8K memory cache.

The computer also has a socket for an Intel 387SX math coprocessor and a full-size 32-bit EISA expansion slot. It has a 3½-inch 1.44-megabyte floppy drive, and buyers can choose either a 120-megabyte or a 240-megabyte hard drive.

The ProSpeed 486SX's standard 2 megabytes of RAM is expandable to 20 megabytes using SIMMs.



NEC's AC-powered 16.7-pound ProSpeed 486SX offers a 640-by-480-pixel display.

The AC power automatically switches between 110 and 240 volts, allowing the ProSpeed to be used internationally.

A 2,400-bit-per-second internal data modem with MNP 5 error correction or a 2,400/9,600 internal data and fax modem is optional.

Windows 3.0 and DOS 5.0 come factory installed.

A 120-megabyte hard drive version costs $6,999. One with twice the internal storage space is $7,499.

NEC Technologies Inc. can be reached at (508) 264-8000.

MIS managers join OSI group to spur open systems growth

BY CATE CORCORAN

A group of MIS managers from 10 large companies — all of whom are fed up with the lack of open systems products — has nearly finished the work it began last year to encourage manufacturers to follow through with their open systems promises. The project will probably be finalized this month at a government-sponsored forum.

Standards and Open Systems, otherwise known as SOS, counts Dupont, Eastman Kodak Co., and American Airlines as some of its members.

Last year, SOS hoped to create an open international forum in which users could communicate needs to vendors, but was wary of adding to the long list of standards-making bodies. Instead, SOS approached an existing forum with its ideas. (See "MIS managers clamor for open systems," September 2, 1991, page 1.)

The chosen vehicle is called the Open Systems Interconnection Implementors' Workshop (OIW), a government-hosted meeting that has so far limited its open systems activities to the networking arena.

In December an OIW task force that included Jim Collins, Dupont's manager of open systems and a spokesman for SOS, proposed that the OIW expand its scope to include the full spectrum of the open systems environment.

Its scope would include data management, data interchange, graphics, CASE, and program development, Collins said.

The response to the proposal was positive: OIW agreed in principle to expand its role. Now the task force finalizing details of the expansion.

The OIW will take a final vote on the proposal when it is complete, probably at a meeting this month in Gaithersburg, Maryland.

SOS will also meet this month to determine what it can do to build on the objectives it accomplished last year, Collins said.

Collins could not say what the group's 1992 plans will be. Last summer, the group told vendors what standards it wanted supported.

er Than Any Other

Genoa to unveil video, graphics cards

Versatile video add-ins can output on computer or TV

BY CATE CORCORAN

Genoa Systems Corp. will announce Wednesday at CeBIT, in Hannover, Germany, PC add-in cards for video genlocking and XGA graphics.

The VGA2TV M2100 series of cards can display input from PAL, NTSC, or S-VHS video sources on a computer or TV screen. It requires a system with any VGA card that has a feature connector, and it will run with any software that supports standard VGA or Super VGA.

The SuperXGA 9600, for PS/2 computers with Micro Channel buses, will ship this month for $799. The SuperXGA 9400 AT, for PC compatibles with ISA buses, is scheduled to ship for a suggested retail price of $749.

The cards come with titling software that allows the user to overlay the video with text in any of 256 colors and a variety of fonts generated on a computer.

The cards are scheduled to ship this month at a list price of $499.

The company's XGA cards are based on IBM's XGA chip, which Genoa licenses from SGS Thompson. Genoa calls the series the SuperXGA 9000 because the cards exceed the IBM standard in some features.

The series offer a resolution of 1,024 by 768 noninterlaced (IBM's XGA is interlaced). They also have a refresh rate of 70 or 72 hertz, which makes them flicker-free.

IBM's XGA vertical refresh is 60 hertz. The cards are also about 20 percent faster than standard XGA cards, according to Genoa.

Product Spotlight

Ventek's high-resolution VGA adapter supports NTSC signals



A VGA adapter from Ventek Corp. capable of supporting a resolution of 1,024 by 768 pixels and 32,768 colors is also capable of outputting standard NTSC signals. The Chroma Gold adapter supports resolutions ranging from 320 by 200 pixels to 640 by 480 pixels on a standard television or video recorder, the company said. An added feature of the board is software that is intended to eliminate the flicker that can result from displaying a computer screen on a television, the company said. Software drivers provided with the board include AutoDesk Animator, Animator Pro, 3D studio, HSC QuickShow, and Mathematica Tempra Show. The board is now shipping at a list price of $369.

Ventek Corp., located in Westlake Village, California, can be reached at (818) 991-3868.

Qtronix gray-scale scanner targets desktop publishing and fax users

BY TORSTEN BUSSE

Qtronix Corp. is shipping a new gray-scale scanner that provides image enhancement and multiwindow processing capabilities.

The MS-7300GS True Gray Scale Page Scanner is designed to meet the needs of desktop publishing and rapid fax communications, the company said.

Available now, the MS-7300GS includes Super Paint IMS Gray Image Software and retails at $575 or $650 when bundled with the Ocron Inc.'s Perceive optical character recognition software.

The full-page scanner recognizes 64 shades of gray. Users can scan any black-and-white or gray-scale page into a PC at up to 400-dot-per-inch resolution.

The Super Paint IMS Gray Image Software provides image enhancement capabilities and allows users to view up to 10 scanned windows simultaneously. Additional software features include zoom in and out, ratio selections, and brightness and contrast adjustment.

Optional is the Perceive optical recognition software that enables users to scan newspaper and magazine reports and convert them into text files. The software supports DOS and Windows 3.0 operating systems and TIFF, PCX, and EPS file formats.

System requirements include a hard disk drive with a minimum of 1.9 megabytes of free space and 640K of RAM in DOS and 2 megabytes of RAM in the Windows environment.

Qtronix is based in Taipei, Taiwan. Its U.S. sales office can be reached at (408) 954-8040.

Laser Maker.

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Tech Talk / Steve Gibson

Multithreaded systems need a new programming paradigm

Last week we saw that even though computers have grown to be many thousands of times more powerful than they once were, the original model for their programming has not evolved at all. Even though we've added layers of powerful structuring and object orientation as a means for controlling complexity and managing multiple-programmer projects, we still think of computers as executing just one simple instruction at a time.

Although this original approach to computerized problem solving is still quite appropriate for computation-oriented tasks, such as payroll and tax management, it fails when we actually require a single computer to do more than one thing at a time, or when tasks become so large that we must coordinate and apply multiple processors to a single job.

Programmers have labored for so long under the notion that computers can only do one thing at a time that this very limited model for computerized problem solving has been incorporated deeply into the mythology of programming. Imagine for a moment how it would be if there were a means for programming a computer to perform any number of multiple tasks simultaneously.

Such a deep change in computing philosophy forces us to abandon our comfortable and well understood "one thing at a time" model in favor of an entirely new approach organized around coordinating and specifying "multiple things all happening at once." This new programming paradigm is known by various names, such as concurrent programming and multithreading.

The first thing to appreciate about this new approach is that concurrent programming and multithreading are not timesharing or traditional multitasking. Timesharing and multitasking are well-established approaches that divide ample computing resources among multiple independent processes so that each one of the independent processes appears to be running simultaneously.

In such a timesharing or multitasking system, the independent processes are typically written without any explicit knowledge of each other, they execute asynchronously from each other, and the operating system deliberately works to isolate each process from all of the others. It's often regarded as a large achievement and a big benefit of the operating system if any one or more of the system's processes can completely crash and burn *without* affecting the execution of the remaining processes.

Although the system's inherently independent and isolated processes could certainly be written to explicitly communicate through files or interprocess "piping" mechanisms of one sort or another, we would say that such interconnections are external to the fundamental programming model supported by the system. With traditional timesharing and multitasking systems, the operating system is designed to isolate tasks.

Unix, the popular multitasking multiuser operating system, is a familiar example of a system that allows independent sharing of the processor and system resources among multiple separate processes or jobs. Although these independent jobs may have been written as a team, much noise is made about the support for cooperation among independently written processes. Unlike traditional timesharing and multitasking systems that support concurrent programming and multithreading provide recently developed disciplines for specifying and managing tightly coupled simultaneously executing and cooperating tasks.

A "thread of execution" is the conceptual unit of processor execution that performs the work in the system.

In order to proceed further into this new theoretical realm of tightly coupled concurrently executing tasks, we'll need to adopt a whole new way of thinking about the programming problem. In essence we'll need to push the abstraction of the "programming problem" further than we ever have before. To support this new abstraction we're going to need some new jargon. So let's introduce and carefully define the new concept of a "thread."

A "thread of execution" is the conceptual unit of processor execution that performs the work in the system. In other words, the thread is the thing that moves from one instruction or statement to the next, executing each statement in turn. This means that traditional programming could thus be called "single threaded" because the programmer is responsible for managing only a single thread during its careful journey from one instruction to the next.

We'll continue with this exploration next week.

Steve Gibson is the developer and publisher of SpinRite and president of Gibson Research Corp., based in Irvine, California.

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PIPELINE

ANNOUNCED

LANNET introduces fiber-optic modules

LANNET Data Communications Inc. has introduced two new fiber-optic modules: the LE-20R dual-port, dual-bus module for MultiNet smart hub; and the LE-25R Ethernet transceiver for interfacing standard Ethernet AUI nodes to a fiber network. The LE-20R connects to one or two Ethernet segments in a multi-LAN environment and allows segment and port switching via SNMP. It is fully manageable by MultiMan, LANNET's SNMP Network Management System.

The company's LE-25R is AUI compatible with Ethernet, Version 2.0 and IEEE 802.3, and features single AUI port and fiber TX and RX port. Both products, when implemented in networks in conjunction with the MultiNet synchronous (10Base-F) backbone, provide multilevel hub cascading and network diameters of 2½ miles. The LE-20R retails for $945, and the LE-25R costs $545. (714) 891-5580.

UPGRADES

PH announces link for PC to mainframe

PH Technologies announced SoftTerm, Version 2.4, its PC-to-mainframe connectivity software. Using a modem, phone line, and a 3270 protocol converter, Version 2.4 connects any DOS-based computer to an IBM mainframe. SoftTerm 2.4 supports file transfer in binary and text mode, terminal emulation, and shared printing either locally or from a host site. A base license is available for $9,500 and supports one mainframe and up to 20 PC users. The company is offering a 30-day evaluation free of charge. (408) 295-2344.

PRICE CUTS

TGV cuts MultiNet for VAX and NFS

TGV Inc. announced a reduced pricing policy for its family of MultiNet networking products, which is in accordance with the Digital Distributed Software Licensing Architecture (DDSLA). The new pricing for MultiNet ranges from $1,200 for individual VAXstations to $2,400 for high-end VAX systems. The prices have also been lowered for MultiNet NFS Client and MultiNet NFS Server. All TGV's software is available for a 30-day evaluation period prior to purchase. (408) 427-4366.

Automated help desks gain currency

Programs let companies standardize procedures, document problems

BY TORSTEN BUSSE

Last week, Compaq Computer Corp. became the latest Fortune 500 firm to embrace an emerging automated help desk technology aimed at solving customer problems more quickly and easily.

In increasing numbers vendors and corporations are automating their customer service and help desk activities. Benefits come in the form of making users productive faster, being able to dispatch internal and external resources to resolve problems more effectively, exposing recurring problems, and providing trend and problem analysis, according to Ron Muns, president of the Help Desk Institute (HDI), in Colorado Springs, Colorado.

Compaq chose the CBR Express help desk automation system from Inference Corp. "The idea is that people you are calling for help will get a timely, accurate, and consistent response to their questions," said Gus Kolias, director of customer service and training at Compaq.



Bendata Management Systems Inc.'s HEAT provides help desk personnel with instant information about the caller's system.

CBR Express, a case-based reasoning system, allows support personnel to take plain English descriptions of computer problems and match them to previously reported cases.

GROWTH INDUSTRY. According to a 1991 survey by HDI — which provides professional training, educational materials, and networking forums for help desk professionals — more than 75 percent of its 1,200 member companies expect to expand help desk operations by 1995.

"The trend is still continuing," said Fred Schrecengost, HDI's director. Reflecting this growing interest, attendance at last week's Third Annual Help Desk Institute International Conference, in New Orleans, was up 50 percent over last year, he said.

John Hirsch, help desk administrator at PMG Peat Marwick, in Montville, New Jersey, uses the Helpdesk Expert Automation Tool (HEAT).

The automatic call-logging, problem-solving, and information-tracking application was designed by a consortium of 28 companies and developed by Bendata Management Systems

See HELP, page 41

Action teams up to automate multiplatform workflow

BY DAVID COURSEY

With help from three major electronic mail vendors, Action Technologies Inc. is seeking to become the de facto standard for workflow technology, allowing an automated process started in one groupware environment to trigger events in another.

In recent months, Action has signed agreements with Lotus Development Corp., Verimation Inc., and Da Vinci Systems Corp. to use its technology in their electronic mail and workflow products.

The most recent was Lotus, which last month announced plans to build a workflow add-on for its Lotus Notes groupware package, slated for release late this year or in early 1993.

Analysts say Action's plan has a chance of success. "The beauty of the Action approach is users will get workflow features within the applications they are already familiar with," said Ann Palermo, director of workgroup and messaging research at International Data Corp., in Framingham, Mass. Action has created a workflow architecture that can be integrated with existing applications across multiple platforms. These applications would use an application programming interface (API) to invoke services from a Workflow Processor, said Tom White, Action's president and CEO.

Action is also offering a design language for designing workflows, a graphical design program, an electronic mail client library, and the API by which applications can access workflow services, White added.

Workflow automation allows users to start a process — such as filling out a form — which then flows through the chain of users, approvals, and tasks to its final destination. A completed order form, for example, might trigger credit approval, inventory checks, shipment of the product, and, once completed, a thank-you note from the sales representative. Management tools allow the process to be tracked at each step.

While Action is well known, thanks largely to its design of the MHS mail transport, the company will not have the workflow arena to itself. Several companies, including Borland International Inc., Oracle Systems, Apple Computer Inc., Microsoft Corp., and NCR Corp., are thought to have their own plans, complicating Action's goal of multivendor workflow connectivity.

TI to improve Server/1500 line with 68040 microprocessor

BY MARK BROWNSTEIN

Later this month, Texas Instruments Inc. will improve the price/performance of its Server/1500 line of multiprocessor systems by introducing a new model based on the 33-MHz 68040 CPU from Motorola Inc.

TI will also introduce by April a new 33-MHz 68040-based server board upgrade, which will allow current Server/1500 users to upgrade their systems for better performance or to support more nodes, TI officials confirmed.

According to early tests, the new server is expected to improve 68030-based performance by three times, said Jony Arnus, TI product marketing manager.

TI's current Server/1500 line, based on Motorola's 68030 microprocessors, supports between 40 and 512 users. The current design is based on a three-board architecture — one each for communications, file services, and overall server application processing. Each board has a dedicated Motorola CPU.

TI's new 68040 server board will integrate file processor and communication functions, allowing the server to support more users and increased performance, Armus said.

The new card can be installed in an existing Server/1500, adding processing power to the current processor unit. New systems that are built around the new board will add up to two expansion slots because of the highly integrated new boards, Armus added. Like the current models, the new server will support TCP/IP, Portable Network-Ware for Unix, and NFS.

The Server/1500, with 32 megabytes of RAM, a 525- megabyte tape drive, operating system, communications processor, and file processor, has a suggested list price of $38,200. Pricing for the 68040-based server and the add-in 68040-based board has not been determined.

Texas Instruments Inc., in Austin, Texas, can be reached at (800) 527-3500.

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PC Computing MVP MOST VALUABLE PRODUCT NOMINEE

Mobile Computing has become a way of life for people whose business takes them away from their office. But this has meant sacrificing connectivity for mobility, and portable PCs have fallen short of delivering the networking capabilities that business travelers need. Until now.

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2400 Modem:	Standard	Optional	Optional	Optional	Optional
9600 FAX:	Standard w/ 80MB	N/A	N/A	N/A	Optional
Software Included:	DOS, Windows, AT&T Mail	None	DOS 4.01	DOS 3.3	None
Size:	9.5x12x1.8" 206 cu"	8.5x11x2.25" 215 cu"	8.3x11.7x1.6" 155 cu"	9x11.4x2.25" 231 cu"	8.5x11x2" 187 cu"
Drives:	40/80MB	30/60MB	40/60MB	20/40/60MB	60/80MB
Battery Life:	5 - 6 hrs.	3 hrs.	3+ hrs.	3 - 4 hrs.	4 - 5 hrs.
Screen Size:	10" Triple ST	9" Single ST	9.5" Single ST	8.5" Single ST	8.5" Single ST
Weight:	7.3 lbs.	7.5 lbs.	5.5 lbs.	7.3 lbs.	6.4 lbs.

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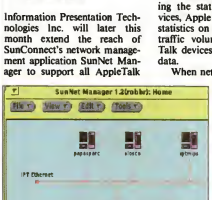
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IPT, Miramar strive for tight network integration

SunConnect to support AppleTalk

BY TORSTEN BUSSE

Information Presentation Technologies Inc. will later this month extend the reach of SunConnect's network management application SunNet Manager to support all AppleTalk devices.



IPT's Apple AgentMan discovers Macintosh devices under SunNet Manager.

IPT's Apple AgentMan extends the discover, reporting, and event alarm features of SunNet Manager to networks that support various AppleTalk devices, said Olivia Favela, IPT vice president of sales and marketing.

With the add-on Apple AgentMan management module, managers who now use SunNet Manager can discover all AppleTalk devices on the network, including those linked through routers and gateways.

Apple AgentMan collects data about each Apple device — including name, zone, and AppleTalk address — and reports the information to the SunNet Manager database.

The package also automatically generates a complete map of the AppleTalk devices on the network. In addition to reporting the status of network devices, Apple AgentMan collects statistics on device availability, traffic volumes across Apple-Talk devices, and routing table data.

When network conditions or a device status changes, the AppleMan agents send alarms to the SunNet Manager. Network administrators can get reports such as "printer out of paper" or "router has gone down," according to the company.

"[To install the application, a network administrator] simply copies Apple AgentMan files into the SunNet Manager," IPT's Favela explained.

SunNet Manager is a hardware and software network management combination that is designed to manage Sun's and third-party networking equipment, including routers, bridges, and hubs.

The software runs on Sun Sparc workstations and supports Sun's proprietary network management protocol, the Simple Network Management Protocol (SNMP), TCP/IP, and the Common Management Information Protocol.

Apple AgentMan is available in mid-March for $595 from IPT or authorized resellers in the United States and abroad.

Information Presentation Technologies Inc. is based in San Luis Obispo, California, and can be reached at (800) 233-9993.

MacLan Connect for NetWare ships

BY TORSTEN BUSSE

Miramar Systems Inc. is shipping a new version of MacLan Connect for NetWare, which incorporates tighter integration with NetWare user, group, and printer utilities.

MacLan Connect is gateway software that integrates Macintosh computers and printers into any NetWare environment, company officials said. It runs on a dedicated personal computer, turning it into an AppleShare file server.

Users access files in the same way as on any other AppleShare file server. Users can share printers, LAN volumes, CD ROM drives, and other network resources, all from their familiar PC or Macintosh interface.

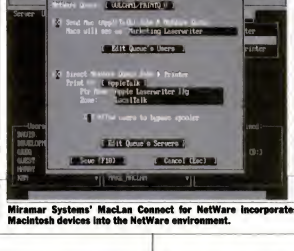
"The most important improvement is the bidirectional printing capability," said Greg Goodman, product manager at Miramar. "All print requests from either a Macintosh or a PC are now routed through NetWare's print queues."

MacLan Connect for NetWare simplifies network setup by taking advantage of Novell's application programming interfaces to automatically detect users and groups that have been defined in NetWare, according to Neal Rabin, president of Miramar. No changes or additions to the NetWare server are required. "It's simply plug and play," Rabin said.

Utilizing Miramar's file extension mapping features, MacLan Connect represents PC files as standard Macintosh icons, and Macintosh files appear as DOS formatted names to the PC user.

MacLan Connect is available now and costs $695 for a 40-user package.

Miramar Systems is based in Santa Barbara, California, and can be reached at (805) 966-2432.



Miramar Systems' MacLan Connect for NetWare incorporates Macintosh devices into the NetWare environment.

DCA agrees to concurrent user licensing

BY DAVID COURSEY

Digital Communications Associates Inc. will license its new Crosstalk Mark 4 LAN Pack communications package based on the number of concurrent — not total — network users.

The decision marks the latest victory for the Microcomputer Managers Association, a group of 1,700 PC managers who last fall called upon software firms to base licensing fees on the number of users who can access server software at one time, said Priscilla Tate, executive director of the New York-based group.

DCA will also support other MMA guidelines by providing metering software, allowing administrators to determine how many copies of the software are in use, and by clearly spelling out its licensing terms.

DCA product manager Bill Pritchard said the MMA recommendations have a significant influence on users' software buying habits.

"DCA and the other communications software vendors have to go this way if they expect to keep their large accounts," said Barrett James of Cexec Inc., a McLean, Virginia, systems integrator.

Since publication of the MMA guidelines, WordPerfect Corp. and Microsoft Corp. have also adopted concurrent-use licensing.

The four-user version of Crosstalk lists for $1,295. A single-user version is $495. Both now support terminals from Wyse and Hewlett-Packard Co.

DCA, in Alpharetta, Georgia, can be reached at (800) 348-3221. The MMA, in New York, can be reached at (212) 787-1122.

DataLens offers enterprise data access

BY SCOTT MACE

DataLens, the primary data access technology in later Lotus software, is being upgraded to allow users to more easily browse data in a variety of enterprise databases.

While DataLens can currently access data from several major databases, including Oracle, SQL Server, and dBase, users must provide a cumbersome string of queries to get to hosts, types of DBMS, and servers.

"[In the new version of DataLens] we've made that much more flexible, so that we can address virtually any network topology," said Doug Bayer, director of database products development at Lotus Development Corp. "The major thing there, is how [DataLens] deals with databases and tables."

Bayer noted, without giving any dates, that the expanded architecture sets the stage for DataLens front ends to access any application deployed on multiple servers, such as Lotus Notes. The enhancements could also allow users to launch remote procedures by accessing the stored procedures in applications such as Microsoft's SQL Server 4.2.

"We could expose stored procedures in very much the same way that we expose tables," Bayer said. "You could get the column information, how you would have to set up the query, what input was required from the stored procedure, and what it returned and have that presented to an end-user in very much the same way that you do for tables."

Still to be announced is how the enhanced DataLens will be rolled into Lotus products. A likely first candidate is 1-2-3 for Windows, although not in the performance enhancement but more likely in Release 2.0, due this year.

That release is also the first that could see the addition of Data Query Assistant, a single-screen interface to DataLens that Lotus discussed last year.

Freelance Graphics supports HP's NewWave, other nets

Network administration capabilities and support for Hewlett-Packard Co.'s NewWave have been built into the network server edition of Lotus Development Corp.'s Freelance Graphics for Windows.

Freelance Graphics' network server edition provides a variety of network administration tools, including a counter that limits simultaneous usage of the software to the number of node licenses purchased.

The package also supports a number of popular network environments, including AT&T StarGroup LAN Manager, Version 3.5; Banyan Systems Inc.'s Vines, Version 4.1; Digital Equipment Corp.'s Pathworks, Version 4.0; IBM LAN Server, Version 1.3; NetWare 286, Version 2.15; Microsoft LAN Manager, Version 3.4, as well as other Windows 3.0-supported networks, according to Lotus officials.

The network server edition of Freelance Graphics for Windows is available now for $795, with each additional node priced at $495.

Lotus Development Corp. is based in Cambridge, Massachusetts and can be reached at (617) 577 8500.

— *Mark Brownstein*

Brixton expands IBM/Sun linkup

BY KATE ORRANGE

Brixton Systems Inc. has introduced several products to provide connectivity between IBM mainframes and workstations from Sun Microsystems Inc.

Brixton's new line is targeted at the insurance, financial, and banking companies, officials said.

The BrxQLLC (Qualified Logical Link Control), is a Sparc-based software product for connecting Sun workstations to IBM System Network Architecture (SNA) resident machines using X.25 networks. When bundled with the company's emulation products — Brx3270, Brx3770, BrxLUO, or NetView emulators — users can employ X.25 networks for data transport between IBM mainframes and Sun computers.

The BrxQLLC is bundled with the company's BrxX.25 and the BrxPU2 server and priced at $3,250.

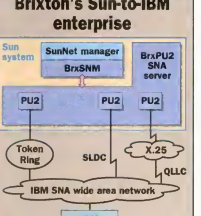
The BrxTR/SNA supports Sun's 4/16-megabyte SBus Token Ring cards and connects Sparcstations and IBM SNA networks over Token Ring. The $1,295 bundled package includes the BrxTR/SNA, the BrxPU2 server, and a Sun Token Ring card. Brixton's BrxPU2 SNA server uses either a VME or SBus communications board to connect Sun computers to the SNA via SDLC lines.

Brixton also introduced the BrxBSC, which integrates Sun workstations and IBM 3270 mainframes over the bisynchronous protocol. The BrxBSC, priced at $750, allows users to write bisynchronous program calls for transmitting data between Sparcstations and IBM mainframes.

"This is important for the financial community, which has been using mainframes for the past 15 or 20 years," said Brixton's president Herb Rush. The products allow mainframe users to more easily and cheaply integrate downsizing strategies into their plans, he added.

All products are shipping now. Call Brixton at (617) 497-2938 for more information.

Brixton's Sun-to-IBM enterprise



BrxSNM captures alarms generated by Sun's SunNet Manager and reports these to IBM's NetView. The BrxPU2 System Network Architecture server links Suns to IBM mainframes over Token Ring or X.25 networks. The BrxSNM also allows IS managers to monitor the BrxPU2-SNA server from a SunNet Manager console.

ICC offers full access for remote users

BY TORSTEN BUSSE

Intercomputer Communications Corp. is shipping a protocol-independent network extension that provides remote PC and laptop users full access to all network resources.

ICC's Remote LAN Node (RLN) is a hardware/software product designed to link remote users to LANs over standard telephone lines.

The protocol-independent software, which is transparent to the network operating system, provides remote access to networks running Novell's NetWare, Banyan's Vines, and Microsoft LAN Manager, as well as other popular LAN operating systems. Protocols supported include TCP/IP, OSI, IPX, and NetBEUI.

Remote users asynchronously dial into a locally connected RLN server that can be either a 286 or 386 class machine. It simultaneously manages up to 16 remote connections and functions as a multiport bridge controller responsible for the distribution of network addresses, company officials said.

The RLN server can give a network address to each remote user or the network administrator can assign them via the Remote Security Adapter (RSA).

The RSA is a 24-pin plug adapter that contains a unique network address and attaches to either the serial or parallel port of the remote PC. When attached to the remote PC, the RLN server verifies the address and permits access to the LAN.

RLN also features monitoring capabilities that collect operational activity statistics for each remote user. It is Windows 3.0 compatible, and configuration is menu driven.

Security is implemented in three different layers: user ID and password, RSA, and dial-back capabilities.

RLN is available in configurations of two-, eight- or 16-user systems. Prices range from $430 (for a two-user system) and $6,600 (for a 16-user system).

ICC, based in Cincinnati, can be reached at (513) 745-0500 for more information.

Novell, Ardat to release software for Autoloader

BY MARK BROWNSTEIN

Novell Inc. has teamed up with a mass-storage developer to offer users a low-cost way to add unattended backup and virtual file server services to NetWare-based networks.

Novell and Ardat Inc. this month will release a NetWare-compatible software driver for Ardat's Python DAT (digital audio tape) Autoloader.

Like a robotic jukebox, the Autoloader can automatically remove a 4mm DAT cartridge from the drive, and it can select and load the DAT that is to be read from or written to.

The Autoloader is available in five-cartridge (10-gigabyte) or 12-cartridge (24-gigabyte) models, according to company officials.

"With an average 20-second file access and 10 seconds to select the right tape, we can offer competitive mass storage solutions for midsized users," said Michael Harris, Ardat director of marketing. With compression, up to 48 gigabytes of data can be accessed by a system using an autoloader, Harris added.

The new driver interfaces with the Novell Storage Management Services (SMS) and is initially designed to run on NetWare 3.11 and above, although a future version will support NetWare 2.2 users, Harris added.

"What Novell was attempting to do with SMS is to provide a standard [interface] so that whenever developers write an SMS-compliant product, new versions of NetWare can be launched, and existing backup applications will always work," Harris said. The communications, security, and file system are done by Novell, and the tape manufacturers build the drivers and interfaces to SMS, Harris added.

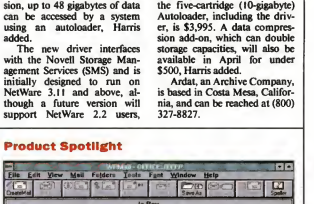
The SMS software driver for the Python DAT Autoloader supports NetWare, Version 3.11 and will be included with the Autoloaders that begin shipping next month from the company's Maynard division.

Users can purchase an autoloader, hook it to a NetWare server, load the Novell driver, and run Novell's Sbackup or any developer's backup software, Harris continued.

The Python DAT Autoloader and driver will begin shipping next month. Pricing for the five-cartridge (10-gigabyte) Autoloader, including the driver, is $3,995. A data compression add-on, which can double storage capacities, will also be available in April for under $500, Harris added.

Ardat, an Archive Company, is based in Costa Mesa, California, and can be reached at (800) 327-8827.

Product Spotlight



HELP / from page 37

Automated help desks gain currency

Inc. of Colorado Springs.

Before Hirsch started using HEAT, operations were very inefficient at his help desk, which handles an average of 100 calls a day.

"We were filling out forms and log sheets. It was time-consuming and impossible to go back and find out what we did in the past," Hirsch said. "With HEAT it's easy to keep track of a problem and look up how we handled it in the past." In addition, Hirsch said the integrated report writer enables him to better justify system changes to upper management.

THE NEXT STEP. Taking help desk automation one step further will actually involve end-users getting more active, said Chuck Williams, executive vice president at Inference Corp.

"A lot of people are excited about the possibilities interactive voice response systems are offering," Schreengost said. "It will reduce the number of calls that help desk personnel handles by 20 to 40 percent."

Bendata Management Systems can be reached at (719) 531-5007. Inference Corp. is located in El Segundo, California, and can be reached at (213) 322-0200. The Help Desk Institute can be reached at (800) 248-5667. □

WP ships Mail for Windows

WordPerfect Corp. this month begins shipping WordPerfect Mail for Windows, an electronic mail program being released while the company considers user demand for a Windows version of its WordPerfect Office.

The Windows E-mail software will be bundled free with the company's existing character-based Office package, which sells for $495 for five users. The Windows client will also be available as an upgrade for current WordPerfect Office users.

While the Windows software will provide all-mail functionality, users still must call up the DOS-based scheduling package to access group calendaring.

WordPerfect, in Orem, Utah, can be reached at (801) 222-4377.

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Network printing

EMERGING FROM THE LABYRINTH



By Kristi Coale

In Norwegian secondary schools it is customary for students and their instructors to spend their first day of class "orienteering," each racing against the others using a compass and a map to navigate between checkpoints on an unfamiliar path. Some participants get lost along the way or take longer routes, but all eventually finish the contest.

Network printing is a little like orienteering. Data in the form of formatting codes and text is sent from multiple PCs along a labyrinth of cabling in the hope that it will find the intended printer.

In some cases users lack two things the Norwegians have when orienteering: a compass and a map. Consequently, not all documents complete the course. Jobs get garbled, are misrouted, or are lost altogether.

Yet, the process seems so straightforward. Printing is one of the most basic services provided by a LAN. It should be simple. The user chooses a font, saves the document, issues a print command from an application, and the document is printed.

Not quite. Here's how it really works: The print command sets off a chain of events starting with the application handing off, for example, a PostScript document to Windows, which then performs a "capture." This command routes output from a local printer port on a client PC to a network print queue.

The document or print job is sent out to the LPT1 port and then on to the network operating system. From there the document travels through the various layers of network protocols, out over the wire and on to a print queue. The queue is a holding area that determines the order in which jobs will be sent to the print server and on to the printer. The queue usually sequences jobs in the order it receives them from PCs along the network.

At long last the job is delivered to the printer. But problems sometime arise, such as when the printer spits out gibberish on a page. The problem could be caused by the fact that the previous print job required Hewlett-Packard Co.'s PCL 5 emulation and Agfa/Compugraphic Corp.'s Intellifont fonts, and no one switched the emulation back to PostScript.

Topping it all off, neither the printer nor the network operating system notified the user that his selected font and emulation conflicted with the current printer setup.

The problems outlined above represent only a small portion of the difficulties surrounding LAN printing. Network experts point out several key areas in which LAN printing falls short of user desires:

- There is a lack of management tools to effectively monitor, configure, and troubleshoot LAN print services. Administrators need some basic capabilities that will allow them to keep track of traffic among printers and print queues.
- Applications and operating systems need to be more "network-aware." They should be able to seamlessly transmit a file directly to a print queue and notify the user of the status of the print job.
- Users require more transparent ways to print over multiple network protocols and printer emulations. The slow learning users encounter should be reduced with the introduction of more intelligent printers.
- As networks grow larger and encompass more platforms, the above problems will be multiplied. Networks are increasingly being called upon to perform the

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functions of mainframes and minicomputers.

OUT OF THE LIMELIGHT. Ironically, networks were invented as a means for multiple users to share printers. But then a little competition got in the way, and network printing took a backseat to other more advanced LAN services, says Arnie Lapinig, vice president of marketing for Insight Development Corp. in Emeryville, California.

"For network operating system vendors, printing is a low priority — it's not glamorous or sexy. They'd rather work on a sophisticated file server," Lapinig says.

Lapinig says the same mind-set applies to applications developers and printer vendors. They're more interested in developing the best spreadsheet or the fastest printer. "No one, save for HP and QMS, has taken a look at the bigger picture. People prefer to think of this area as the garbage business," he says.

Lapinig has created a business to fill the void. He has created a new application category — LAN print management. His company is the developer of Mosaic, a print server program for the NetWare environment that very nearly duplicates the types of operations found in network management programs.

Mosaic helps out at the end-user level, too, by determining which printer is the most appropriate for a given job. This analysis goes beyond the printer emulation to include distinctions between jobs, such as for duplex (double-sided) printing.

In print management, Mosaic can alleviate traffic problems along a network by automatically routing jobs from an overcrowded queue to one that is not so heavily taxed. More importantly, the program audits printer usage, using features such as snapshots of printers, fonts, font cartridges, paper, and related costs for individuals and the overall network.

"There's a big need for a utility that generates an accounting report. With it, managers can determine which departments need more printers. They can use the information to design a more efficient print network," says Ken Haynes, vice president of technical services for 900 Support, a call-in support organization in Lake Oswego, Oregon.

Such a tool is a great boon to network operating systems, which are stepping up their management capabilities as well as other printing services.

> **"The most common network printing problem is that most people don't understand how the process works."**
>
> *Ken Haynes*

USER SAVVY REQUIRED. Users are often their own worst enemy where network printing is concerned. "The most common problem with network printing is that most people don't understand the basics of how the process works," Haynes says.

Users are getting more involved in network printing, as evidenced by the volume of calls Haynes receives on the issue — the majority are from users experiencing difficulties with network printing.

"You need to educate users on the basics. They should know if their machine is acting as a part-time server, and whether it has to be on for the printer to work," says Ron Neely, a battle-scarred veteran and network administrator for the University of Missouri at Columbia.

Neely's users run the gamut — from those who think the computer is the monitor to those who show an interest in networking.

However, Neely believes education should only go so far. "You can tell people too much and then they want to play, which cause problems for me and my technician," he says.

Howard Marx, chief scientist for Networks Are Our Lives Inc., in Scarsdale, New York, has witnessed first-hand the problems that arise when users aren't trained in LAN basics.

"One client had a PC in an office that was hooked up to two printers out on the floor. The guy in this office went on vacation for three days, turned off his PC, and locked his office. The others in the office couldn't print for three days," he says.

Needless to say, Marx is not a big advocate of turning end-user PCs into part-time print servers. "Users sometimes don't realize that they're what's helping the printing process," he says.

SMART PRINTERS EASE MANAGEMENT WOES. Despite these problems network printing is steadily improving, thanks to recent introductions of "shared environment" printers, such as HP's LaserJet IIIsi, QMS Inc.'s PS 2000 and 1700, and third-party products. (See story on page 46 for a list of third-party products.)

All three printer types have similar capabilities at one level: All can be or will be attached directly to the LAN through an Ethernet or Token Ring connector, and none of them require a dedicated server.

They are server-independent because printer makers are incorporating networking software in firmware. These increasingly intelligent printers contain the software necessary for queuing jobs and pulling them off the network. Thus, the printer is the print server. For the recently announced 1700, QMS will ship Ethernet and Token Ring adapter cards and corresponding LAN driver software in the second quarter of this year.

All three products provide for unattended print services, such as offset printing, where the output tray sets consecutive completed print jobs in different positions. However, QMS' Emulation Sensing Processor (ESP) adds another level that shields the user from having to worry about his printer or network emulation when sending a job.

ESP determines the page description language used for each job and automatically switches the printer's emulation mode, eliminating the need for any manual switching on the user's part. Downloaded fonts used in an emulation stay resident in the printer even though it may switch over to another mode. QMS calls this context switching.

The IIIsi can have automatic emulation switching through third-party software products such as LaserTools Inc.'s Printer Control Panel. This utility invokes a feature called AutoPilot, which determines the emulation used for each print job and performs the switch.

Another feature of the QMS printer that makes it suitable for network printing is its multiple, simultaneously active ports: Local Talk, serial, parallel, and a fourth optional port for either Token Ring or Ethernet. They are all simultaneously active, allowing all of them to accept print jobs from many network forms. Jobs are spooled and printed in the order received, just as they are in any other queue.

LOOKING AHEAD. LAN printing problems are compounded as networks grow and connectivity to minicomputer and mainframes is added. Some LAN administrators may decide to give users access to host-based printers.

But enterprise printing is just beginning to be addressed, and it has a ways to go, says Leo Spiegel, executive vice president for marketing and business development for LAN Systems, in San Diego.

Corporations are getting around this to some degree by merely downloading the information from the mainframe or minicomputer to the PC, which can then send the text to the LAN printer. "But that's not universal printing. That's just downloading information to the LAN. And that's not too efficient for some organizations," Spiegel says.

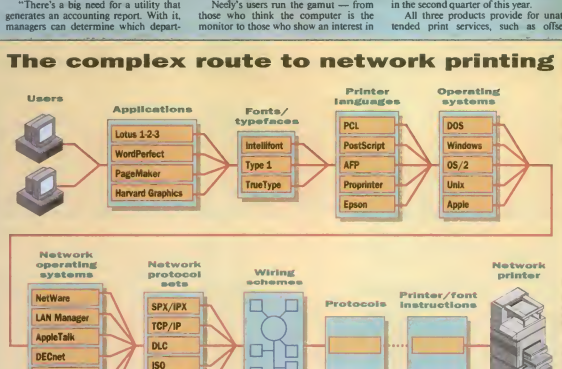
The future for network printing appears to be full of integration and multiplatform support. Already, printers are coming equipped with ports and emulations to handle Macintosh, PC, Unix, mainframe, and minicomputer operating systems.

"You can divide the network to have mainframe printers and LAN printers, or you can have LAN printing. But to do this, you need a printer that is compatible with mainframes and minicomputers, as well as LANs," Spiegel says.

But the integration will have to go further than that to include parts of the network operating system. "LAN printing has evolved with network protocols such as NetWare IPX being integrated into the printer firmware," says Darrell Miller, executive vice president of marketing for Novell Inc., in Sunnyvale, California. "Eventually, printers will contain the entire stack of NetWare code, making it more fully configurable and manageable by NetWare managers."

With printer firmware already tackling print server tasks and network operating systems and applications becoming more network-aware, LAN printing appears to be getting easier to accomplish. But according to users, it still has a ways to go. □

The complex route to network printing



The seemingly simple task of LAN printing touches on virtually every facet of the computer system.

GREG BORZO / INFOWORLD

Increased printer configuration options available to LAN managers

BY KRISTI COALE

Printer software and hardware extensions are making shared printing a little more palatable by providing network administrators with more configuration options in the LAN environment.

Traditionally, printers were hooked directly to dedicated print servers, which provided queuing and configuration control. Users' print requests had to go through the print server in order to be executed on particular printers around the network.

Under that system, administrators were strapped by distance limitations — the length of the parallel or serial cables between the printer and the server typically ran 30 to 60 inches. As a result, printers had to reside in the same room as the server. This was an expensive system because it required a dedicated PC for each new printer added to the network.

A relatively routine alternative today is for managers to turn some of their end-user stations into hybrid machines that function as print servers and workstations. This scheme allows a network administrator a little more freedom in installing printers along the network. They also can free up the PCs that were dedicated print servers, which reduces the number of nodes along the network and makes the network more efficient.

The problem with this setup is that the workstation pulls double duty and tends to run slower. In addition, the software required drains PC memory.

Novell NetWare 3.11's PServer and Banyan Systems Inc.'s soon-to-be-released Vines 5.0 with PCPrint allow workstations along the network to function simultaneously as print servers.

Software products like LANSpool from Intel Corp., PS-Print from Brightwork Development Corp., and Printer Assist from Fresh Technology Group augment PServer in NetWare 3.11, says Patrick Corrigan, a LAN consultant with the Corrigan Group, in Sausalito, California.

This scheme allows more freedom in installing printers along the network.

All these products allow any workstation on a LAN to share printers with the network, and they provide queue management capabilities. Additional printers can be hooked anywhere on the network once this software is installed on a PC. These products are also compatible with Microsoft Corp.'s LAN Manager and IBM LAN Server.

A new wrinkle in LAN printer setup involves hooking the printer directly to the network without the need of a dedicated server. Hewlett-Packard Co.'s LaserJet IIIsi does this for all networks, and QMS Inc.'s recently released PS 1700 printer will soon have this capability with the release of the company's Ethernet and Token Ring interface cards. Inside the LaserJet IIIsi and on the interface cards for the PS 1700 is the software necessary to make the printer accessible to all users along the network, as well as queue management capabilities.

For those without HP or QMS printers, Intel and Castelle provide a "black box" solution. Intel's NetPort and Castelle's LANpress are boxes that connect directly into the network. These solutions are Ethernet and Token Ring compatible and run over a variety of media including 10Base-T. They provide all PServer capabilities such as problem notification and queue management.

These emerging solutions provide network administrators with the most flexible options. With these tools, a printer becomes just another node on the network. The downside to the "black box" solutions is that they require serial or parallel connections to hook into the printer.

"These are simpler than the servers, but the parallel or serial port will slow things down," says Howard Marx, chief scientist with Networks Are Our Lives, in Scarsdale, New York. "But with the printer hooked up directly to the network, you have fewer administrative problems. You don't have to worry about initializing queues, etc."

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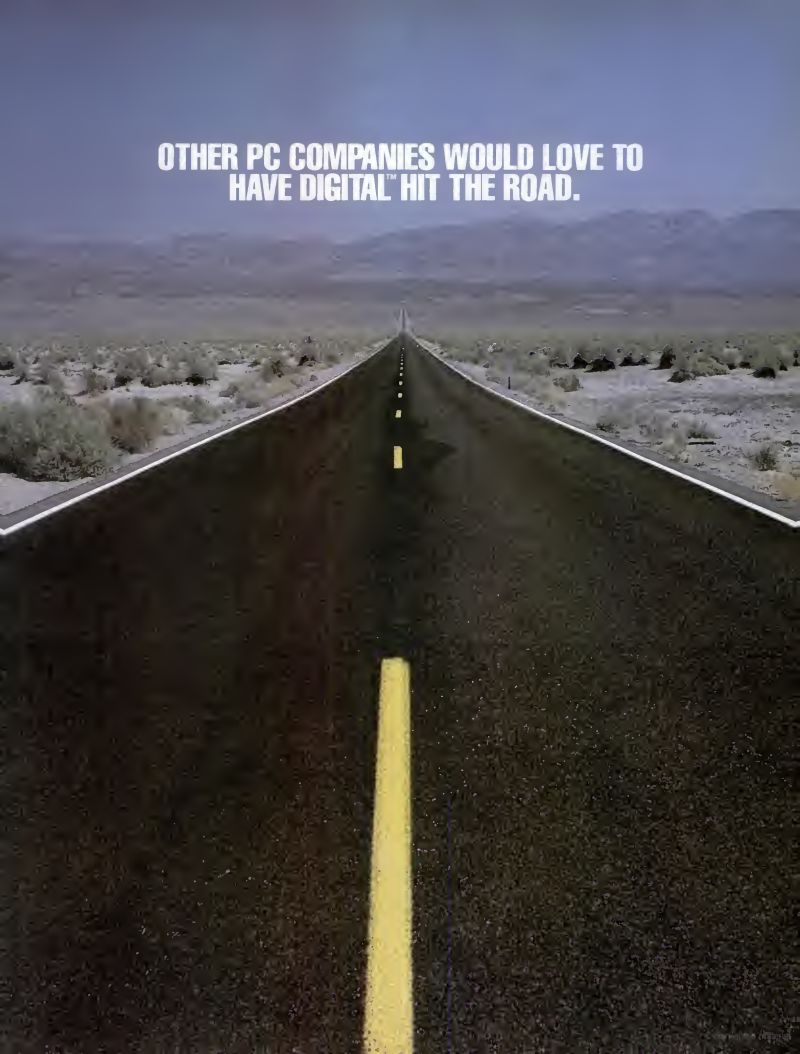
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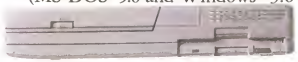


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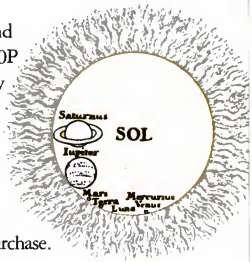
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Your base system is a: ☐ 286 ☐ 386 ☐ 486 ☐ Other

How many applications will your PC(s) run in a typical workday? _____

What best describes the type of work the system will be used for? (Check all that apply)

- ☐ Word Processing
- ☐ Desktop Publishing
- ☐ Scientific Research
- ☐ Order-entry
- ☐ Education
- ☐ Software Development
- ☐ Database (filing records)
- ☐ Design (CAD/CAM)
- ☐ E-Mail
- ☐ Financial Calculations
- ☐ Engineering
- ☐ Other industry-specific applications (please specify)
- ☐ Retail Store Management
- ☐ Industrial Process Control

How many people work in your group, department or small business?
☐ Less than 10 ☐ 10-20 ☐ 20-35 ☐ More

Is your operating system:
☐ DOS ☐ DOS with Windows ☐ OS/2 ☐ MAC ☐ UNIX™ ☐ Other

Which of the following graphics-oriented applications best describes your needs? (Check all that apply)

- ☐ Desktop Publishing
- ☐ Realtime Modeling
- ☐ AutoCad
- ☐ CAD/CAM
- ☐ Animation
- ☐ Business Graphics
- ☐ Image Processing

LAN Communication

How many PCs do you have installed? _____ From how many manufacturers? _____
What kinds of connections does your PC(s) require? (Check all that apply)

- ☐ Links with other PCs in the immediate surroundings
- ☐ Connection to the local area network (LAN) throughout a building
- ☐ A line to a host system in a remote location

What kind of media (cable) is used in your LANs today? _____
What is the networking software now being used in your company? _____
What kind of host system will your PC communicate with?
☐ DECpc ☐ IBM ☐ Other _____

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Do you currently have a service contract(s) for your PCs? How many? _____

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Women making gains in IS sphere

PC industry is catalyst for equal opportunities in IS management

BY KRISTI COALE

The personal computer industry has proved to be an equalizer of sorts — pitting the programming moxie of fresh-faced kids against the technical expertise of mainframe veterans.

As the PC garnered more attention in corporate America, it brought opportunities to many who might not otherwise have found themselves working with technology.

Among this group were women IS professionals who saw rewards for their interest in and mastery of technology. They arrived at their positions through a variety of means — by acquiring needed technical skills in some cases and accepting opportunities as they arose in others. Many of the female computer professionals we spoke with had intended to enter the business world as accountants or financial analysts. But these career paths became stepping stones to jobs in corporate IS departments.

Joanne Witt, for example, wound up hawking her business skills to get into IS circles. A senior technology analyst for Seimens Medical Systems, in Iselin, New Jersey, Witt planned on a marketing career after completing her MBA in marketing and finance, but found job prospects bleak due to the 1982 recession.

Exposure to the Apple computer whet her appetite for technology. She became PC-literate shortly thereafter and went to work for a computer distributor, then a dealer, and then on to corporate America.

"I decided to enter the computer industry because I felt there was a lot of room for me to gain knowledge and grow professionally," Witt says.

Others started out in the computer field and found that it was the technology and their ability to learn it that mattered, not their gender. "I've been pretty lucky — it's hard to prove that there are barriers with regards to sex," says Doreen Rubin, technology officer for Chemical Bank, in New York.

As a data entry clerk in college, Rubin took an interest in programming. "I worked in the same room with a programmer — I found what he was doing to be very interesting. Eventually, I received training to become a programmer," she says.

But information technology has not been entirely immune to the ills found in other fields. Corporations are having to come to terms with a more diverse work force — one that includes women and minorities at all levels. To open their environments to these changes, several major corporations are presently establishing internal support groups and forums for their employees. These forums can be companywide or specific to various divisions, such as IS, and they can in some cases provide employees with a platform through which they may voice concerns to management.

Despite all of this openness on the part of corporations, many women declined to be identified in this article.

ISSUES TO BE ADDRESSED. While women have reaped rewards, they've also encountered hurdles, some of which have yet to be cleared — such as breaking into the ranks of upper management. "All of our upper managers are men — and they're old mainframe types," said one female IS professional who asked not to be identified. "I find them to be particularly cliquish."

This IS professional is in charge of all PC operations for her company, including PC LAN maintenance. She was recently promoted into a position created for her by the company management, but only after they had brought in a man from the outside to fill a position that was above her. She believes she was originally overlooked because she was outside the "mainframe club" above her, and her managers did not understand or appreciate her skill set.

Witt also hedged up against the credibility gap earlier in her career. "When I first started, it was hard to be taken seriously," she says. "People had manifested some mechanical ability in men, so I was given little or no credit for having technical knowledge."

Recalling her job of five years ago, Witt says there was blatant sexism. "It was job review time, and the man who sat next to me in the office was given a raise and promoted because he was getting married and would presumably have a wife and family to support," Witt says.

However, the inequities have ceased for Witt as she has moved onward. She says the past two years at Seimen's have been the most comfortable in her career.

Carol Meadows, a consultant with Logica North America, in Los Angeles, believes that there's a bigger picture for women beyond the stories of not being taken seriously. "I think there's a bigger problem of getting into management: It's harder to be recognized as a manager," she says, though she is not quick to lay the blame on sexism. "I don't know if this is specific to women."

Logica's management team is all male, but Meadows says she's been given a lot of encouragement from her managers at Logica to further her technical skills.

GAINING IN NUMBERS. Women in IS indicate their ranks are growing. However, trying to nail down concrete figures to show the number of women in this field is difficult. No such numbers appear to exist — various associations including the

See WOMEN, page 56

Isocor ushers X.400 into the electronic messaging mainstream

BY KARYL SCOTT

Many network and systems vendors talk about supporting the international X.400 standard for global messaging, but a southern California start-up is on the verge of delivering real-world solutions.

Los Angeles-based Isocor this summer is expected to release a series of X.400 electronic messaging products designed to simplify cross-platform messaging.

The company will also sell Electronic Data Interchange (EDI) products that work over X.400 message transport systems.

Isocor, founded by Andy De Mari, former Retix Corp. chairman, hopes to demystify the Open Systems Interconnection (OSI) X.400 technology and make it more accessable to network users. Retix was an early developer of OSI and X.400 products for the OEM and end-user communities.

Isocor will begin beta testing three core products this month, including an X.400 message server called Isoplex 800. It will initially run on the IBM RS/6000 Unix workstation line and will sell for between $10,000 and $20,000. The corresponding client software will sell for between $50 and $150 per user.

Isocor will market EDI software called Isotrade 800 and 400. This server software is designed to let users transmit EDI data, such as electronic business forms over an X.400 transport. Isotrade conforms to the OSI P-EDI or X.435 standard for encapsulating EDI data in an X.400 message. Prices range from $1,000 to $3,500.

Isocor will also sell a family of security software called Isosec 800 designed to provide authentication and data integrity to EDI and X.400 messages and related data. Prices range from $2,000 to $10,000.

"The early X.400 products to date seemed to be developed *by* programmers and *for* programmers," according to Bjorn Ahlen, Isocor vice president of marketing and sales. "If X.400 is ever going to take off, products that support this international standard will have to become a lot easier to implement and use."

While X.400 received a great deal of user interest in the past year, few companies have developed corporatewide messaging strategies and fewer still have actually implemented systems, say industry analysts. Only a handful of organizations, such as Martin Marietta Corp., Boeing Corp., and the U.S. Army Corps of Engineers, have implemented X.400 gateways and backbones.

Given the current wait-and-see climate in the electronic messaging market, Isocor might be a bit ahead of the market, analysts say.

"Isocor is made up of an impressive cast of characters who are expert in the OSI and X.400 fields," says Victor Wheatman, Gartner Group director of the Inter-Enterprise Services program, in Santa Clara, California. "They're hoping to market messaging products direct to the end-user, but given the current state of the X.400 market, I think they will end up working initially with the Value-Added Network (VAN) providers and communications software vendors. The X.400 market is not yet mature or broad enough to support off-the-shelf products," Wheatman says.

The strongest potential market for X.400 is the EDI market, Wheatman adds. Market researchers predict that within the next five years most large- and mid-sized corporations will be transmitting standard business data such as purchase orders and invoices using EDI systems.

"The combination of EDI and X.400 is a natural," Wheatman says. "And I think Isocor is the first company to develop products that integrate these two technologies and conform to the OSI P-EDI standard."

Isocor, 12011 San Vincente Blvd., Suite 500, Los Angeles, CA 90049; (310) 476-2671.

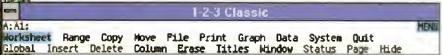


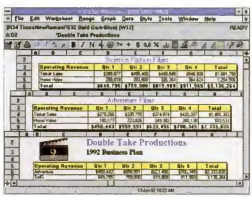
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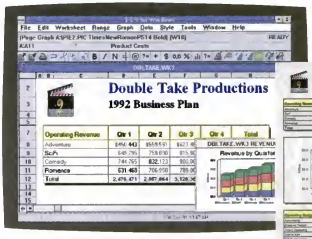
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Association for Women in Computing and the Association for Information Management as well as the U.S. Bureau of Women's Labor Statistics have yet to start keeping track of these numbers.

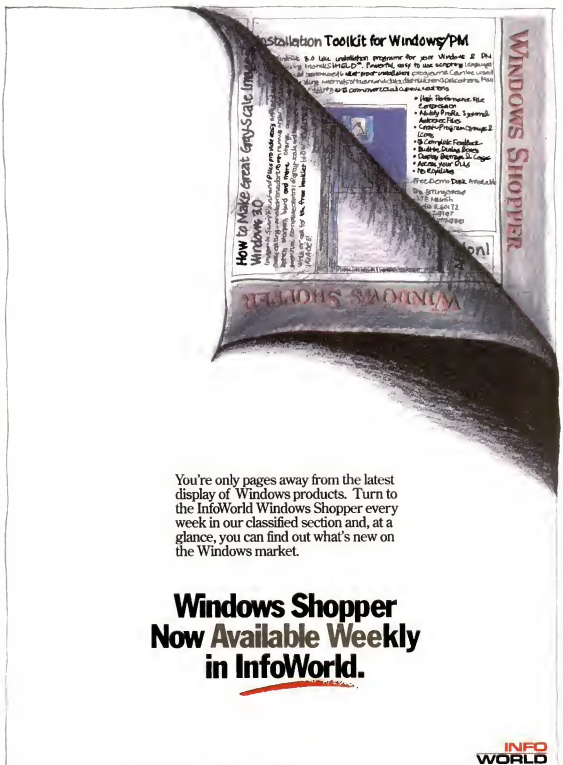
Rubin attributes the low number of women in technology and the dearth of statistics on the fact that women entered the work force later than men and got an even later start in IS.

The newness of the PC industry and its rapid growth have created lots of opportunity for women, says Lynn Barren, director of technology for Standard & Poor's Corp., a debt-rating agency, in New York.

An insurance company IS manager (who would like to remain anonymous) corroborates that theory. She started in an accounting position with the insurance company at a time when PCs were sparse. A lateral move to the financial IS department and some on-the-job training allowed her to become PC literate. She quickly went from being a business analyst into PC management. "The mainframe techs couldn't manage to move mainframe apps to the PC [because they didn't understand it]," she says. "I worked on it and saw my experience triple in two years."

These experiences are a testament to the PC's role as an equalizer. For women to advance and increase their ranks, the key is to concentrate on expanding one's knowledge, says Judy Andrews, business development manager for telecom systems for Texas Instruments, in Dallas.

"What I try to do is focus on the available opportunities," she says. "I think, in the long run, achievement speaks for itself." □



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INFO WORLD

USER NEWS

ANNOUNCED

MCC, Washington Institute develop enterprise tools

The Microelectronics and Computer Technology Corp. of Austin, Texas, is working with the Washington Institute of Technology, in Tyson's Corner, Virginia, to develop tools that aid in the creation of enterprise computer systems. The tools will establish a set of computer models that will show users how to integrate their various computer systems into an enterprise framework. MCC earlier announced plans to develop an enterprise network framework. For more information contact WIT at (703) 506-8555.

• • •

Unix Systems Laboratories, in Summit, New Jersey, and **Tivoli Systems**, in Austin, Texas, recently agreed to develop a unified object-oriented framework for Unix System V.4. The technology will ease the creation and management of distributed computing environments. The resulting product will be based on Tivoli's WizDom object environment, which is also used in the Open Software Foundation's Distributed Management Environment. USL chose WizDom due to its ability to work with applications from various computer companies. Contact Tivoli at (512) 794-9070.

• • •

Ascom Timeplex last month announced a comarketing agreement with **AT&T** for Ascom's ISDN Gateway Server (IGS) system. In addition, the company revealed two enhancements to IGS — support of AT&T SDDN 384 and Automatic Number Identification. IGS converts non-ISDN signaling to ISDN D-channel signaling, giving equipment, such as a PBX system, access to ISDN without requiring terminal adapters.

IGS system enhancements are now available with prices ranging from $15,000 to $35,000 for the Model 16 and $18,000 to $60,000 for the Model 44. Price depends on the configuration. For more information, contact Ascom at (201) 930-4641.

SERVICES

ISICAD establishes network service group for COMMAND

ISICAD Inc. has formed a new services group for physical network management. The COMMAND Center will provide consulting, implementation, and customization services to companies evaluating the cost and control benefits of managing their network resources with ISICAD's decision support software, COMMAND. For more information, contact ISICAD at (714) 533-8910.

CONFERENCES

MCN conference focuses on expanding opportunities

The Macintosh Consultants Network will hold its Eighth International Consultants Conference, "Expanding Opportunities in Microcomputer Consulting," April 23 to 26, in Wakefield, Massachusetts. The MCN is a professional association for consultants working with the Macintosh platform. For more information, contact the MCN at (800) 729-4MCN.



IS Profiles / Alice LaPlante

Decentralizing systems is not the best solution for everyone

Although there is a lot of talk about downsizing to PC LANs, not every one is ready to throw away his or her host systems. I've been getting a lot of calls from IS managers who agree with Dorothy Yetter — CIO of San Mateo County, California, who was featured in a previous column — that it's essential not to blindly downsize to smaller systems.

Picking the most appropriate platform has as much to do with organizational and business issues as with technical ones.

Lou Reilly, of TDS Telecom, is of this opinion.

Although desktop technology and distributed applications are intriguing, there are times when it makes more sense to keep mission-critical operations centralized.

His solution: Build a portable system that can be downsized and distributed at virtually a moment's notice — whenever the organization decides to change hardware platforms.

TDS Telecom is a division of Chicago-based Telephone and Data Systems, which is the 18th largest telephone company in the United States, serving more than 300,000 access lines. The company is managed and operated on a decentralized basis through four regions, owning 86 local telephone companies in 28 states.

Reilly's main concern: Most of these companies are small, rural interexchange carriers with an average customer base of about 3,500.

"We have a lot of small rural operations and felt we couldn't afford the risk of a decentralized database," Reilly says. "We still needed for this to be a centrally and professionally managed application and simply didn't think it could be done efficiently from a distributed environment."

Reilly developed a customer service system in 1976 called the Integration Record Information System, a mainframe-based system that was forms-driven. Because of changes in the industry and growth within the company, it was on the verge of exploding.

"The service rep was handling 16 or 17 pieces of paper just to get a new customer installed," Reilly says. "We needed a simpler system."

That was the situation for several years, but what prompted Reilly to actually move on developing a new system was its business relationship with AT&T. A billing and collections contract required TDS to have a more detailed billing system in place for 1990, or "we would lose a significant amount of money," Reilly says. "So on the one hand we had that significant financial motivation. and on the other hand, we had a system that was coming apart at the seams. We knew we had to knuckle down."

But because there was so much risk, TDS involved consultants in key aspects of the project. After the preliminary system design was completed, they called in an outside consulting firm to review their decisions. Then they hired Andersen Consulting to help with the actual development of the new system.

TRIOS is based on Oracle Corp.'s relational database system and was designed to eliminate the need for MIS intervention in most routine system changes.

TDS has a blend of IBM mainframe operations, IBM RTs, and traditional PCs. "We think very carefully as to the most appropriate platform for any given application," Reilly says. He adds, however, that one reason Oracle was chosen as the relational database was that it is virtually platform independent. The system can be shifted down to the desktop without substantial recoding.

Equally significant to Reilly's success story is the fact that he isn't officially a member of IS. He is vice president of customer service and oversees the business function that required the development of the new system. Yet to hear Reilly talk, you would assume he had a technical background. This, Reilly points out, is how TDS views all its mission-critical application development work. Having extremely technology-savvy users and managers working hand-in-hand with technologists from the firm's data processing subsidiary is standard operating procedure. "It's the only way to insure success," Reilly says.

WOMEN IN IS MANAGEMENT. About five years ago, I attended a computer industry conference at a plush San Francisco hotel. Of the 500 or so attendees in the audience, perhaps one-eighth — or less — were women, and most of them were members of the press or public relations community. But times are changing. Fewer computer companies use photographs of scantily clad females in their advertising campaigns. And more young women are getting their degrees in technical and engineering fields and moving into the ranks of corporate IS.

But female IS managers and directors are still relatively rare. Here we profile two and examine how they achieved their current positions. We wondered how being female in a male-dominated field has affected their career paths.

RISING THROUGH THE RANKS. Sharon Moses is data processing manager for Plochman Inc., a Chicago-based manufacturer of mustard. She has been working at Plochman for 19 years, having started out as a clerk in customer service and gradually acquiring better jobs and better pay by moving to various positions in different departments: from customer service to accounts payable, then to accounts receivable, inventory control, and finally, into IS, where she has worked for 13 years.

"When I worked in inventory control, we weren't computerized but we realized the need for computer systems, so the company sent me to school to learn how to program," Moses says. Her job was to develop an inventory control system for Plochman. She did such a good job that her company sent her back for further classes. Eventually, when the then-IS manager left the firm, she was offered the job.

"I'm lucky in that my company is not biased as to promoting women," Moses says. "If you have the willingness, the experience, and are aggressive enough to pursue what you want, you will certainly be considered." However, she does feel that there can be barriers to women getting ahead in other companies. "Whether they admit it or not, I believe some men are still biased in favor of hiring another male," she says.

Moses' advice for young women with IS ambitions is to get a technical degree — something she herself lacks. "I think that can be a real advantage," she says.

And Moses says that balancing a full-time career — particularly a high-level management position — and a family is a very challenging task. When she was first hired at Plochman, she had two small children — ages 2 and 5 — and she admits it was difficult at times to juggle everything effectively. "You obviously have to do a good job, yet at the same time you don't want to take too much away from your family," she says. "It can be tough." Although Moses' husband and children helped considerably with the housework, the operative word was "help," she says. "I was still the one responsible, ultimately, for making sure everything got done," she says. And when one of the children was sick or needed her during the work week, she was the one that went home, not her husband. "My company is understanding about problems at home, but I think the reason for that is that they knew I compensated in other ways," Moses says. "I worked many 12- or 16-hour days, and came in on weekends to make up for any time I might have missed."



SMITH-TUCKER/TDS / GRANT CARLSON

Lou Reilly of TDS Telecom says decentralization isn't always synonymous with downsizing. For manageability, a centralized LAN application may be best.

DEVELOPING EXPERTISE. Katherine DeBruyn is MIS director for Perkins Coie, a 900-employee law firm based in Seattle. She has an undergraduate degree in African literature and languages from the University of Wisconsin, in Madison. After graduating she accepted a job in Washington at the National Archives and Records Service, a federal agency that acts as an information and records-management consulting service for other federal offices.

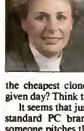
"When I started, it was basically a paper-based activity, but we naturally evolved into a computerized operation," DeBruyn says. She worked in Washington for seven years before being transferred to Seattle as the director of the regional office, a position she held for three years before starting her own consulting firm.

"As an independent consultant, I specialized in development of document management systems, database design, and document flow and processing systems," DeBruyn says. After 12 years of having her own consulting firm, she accepted the position as head of MIS at Perkins Coie 2½ years ago.

"This was a really exciting opportunity for me to work directly in a very document-intensive environment with state-of-the-art technology," says DeBruyn, who manages a staff of 18 IS employees. All front-office operations at Perkins Coie are PC-based, using Windows, LAN Manager, and SQL Server. DeBruyn says it has been very exciting to be at the birth of a new technology and a new way of doing things.

She personally has never felt that being a woman in a technical field has stood in her way. "I simply haven't found it to be an issue," she says. "Here, our corporate culture is such that it isn't unusual at all to see a woman in a position of authority or power. We have a large number of highly regarded and highly accomplished female attorneys here."

Her advice to women entering the field: "While it's important to master the technology, it's equally important to focus on the big picture, the user base, and what the technology does for the user. Understanding how to communicate is often as important as understanding the technology."



New Age IS / Cheryl Currid

'Clone du jour' looks cheap, but can end up costing a bundle

Still trying to figure out what kind of PCs to buy for your company? Considering saving a few bucks by going with the cheapest clones you can find on a given day? Think twice.

It seems that just as IS folks settle on a standard PC brand and configuration, someone pitches the latest Sunday ad for a bargain-basement clone. "It's the same thing, and you can save money — right?" After all, they go on, a no-name clone will work just as well as one of the brand names.

Frankly, no. Companies that pursue the clone du jour standard are asking for problems. Even though prices for no-name clones look attractive, people should consider the real cost of ownership before signing the purchase order.

Consider this example, in which a couple of corporate citizens recently found out how hard it was to support a fleet of PCs — such as Heinz, in 57 varieties.

Staffers in this company had a brilliant idea. They had developed some in-house software that collected, transmitted, and analyzed sales information. It turned out to be a killer application for the folks who were using it. It saved time and churned out great information that helped people quickly create hot-shot sales presentations.

The application was so hot, in fact, that the company wanted to share it with its independent broker sales force. The IS staff created a plan for deploying the application and set out to take the software to the independent sales force — trying to install it on everybody's PC.

After several installation attempts they nearly canned the project. Installations were a disaster. Why? The software was fine, but the staffers couldn't support the hodgepodge of clones. You see, there was no consistency, no order, and no capability to support the incompatible clutter of clones. Not only was it difficult to get the software installed, the developers began to question their capability to support it over the long term.

It turned out that most of these independent sales organizations had purchased "clone du jour" brand computers and hooked them to a variety of alien form modems and printers. Some of the computers had two serial ports, some had none, and, of course, nothing was labeled. The peripheral collection included all forms of nonstandard printers, and the modems must have been communicating with E.T., because they couldn't communicate with anything earthbound.

Variety did not end with hardware. The people trying to install the software found every form and version of operating system from Microsoft DOS 2.1 to 5.0 to DR DOS. No two hard disks were partitioned or set up alike. Some folks loaded everything in the root directory while others had complex five-level deep structures with what looked like a secret-coded naming convention. (And, of course, in these cases, the guy who set up things had left the company without documenting anything.)

No matter how hard the team worked, it took three to five days to get the software loaded and tested at each site. That compared with a half day for installation and testing on the company's own crop of consistent PCs.

Quality counts, especially if you run various business applications on PCs. . . . Make sure it's compatible with everything you've got.

There is no happy ending to this story. The buyers of these computers sure thought they saved a lot of money, but lost out when it came to getting an application up that could really help their business.

In another case, a company recently nixed moving an application down from a minicomputer to LANs because nobody could get the prototype working. The problem wasn't software or the resizing of the application to a server — it was the PCs attached to it.

This company had used "Sunday sales" strategy for buying PCs. They bought the cheapest PC from whatever was on sale in the Sunday newspaper. As a result, the collection of PCs came from vendors whose names were long forgotten.

When the company tried to bring up the application on a LAN, some PCs could get to it while others couldn't. The results were baffling and confusing, and scared everyone into buying a minicomputer at twice the cost of the LAN alternative.

The moral of these stories is to look before you leap. Quality counts, especially if you are trying to run a variety of real business applications on PCs. Some day maybe I'll develop "Currid's Corporate Computing Seal of Approval" for PCs and peripherals. But, until then, watch what you buy. Make sure it's compatible with everything you've got or are going to have. Saving a few dollars on the purchase order isn't always worth the price.

Cheryl Currid, president of Houston-based Currid & Co., focuses on helping clients assess, apply, and organize for new information technology. Her CompuServe address is: 75300,2660.



Enterprise Strategies / Ed Foster

Microsoft's Cairo takes us right into the heart of darkness

It occurs to me that we're all pretty much in the same boat these days. We know where we want to go, but to get there we're going to have to navigate across a dark, uncharted continent where the only thing we can be sure of is that there are lots of lions, tigers, and bears waiting to pounce on us at every wrong turn.

Computer users, and the vendor community as well, all seem to be moving toward the same goal: a true enterprise-wide distributed computing environment. It's one that would make transparent use of varied platforms and resources, would be object oriented for more efficient application development, and would be scalable and extensible and compatible and all that other good stuff.

But getting there from here is the real trick. Not that we suffer from a lack of suggested courses. There's no shortage of prospective guides claiming that they have the secret map that will guide us safely to the promised land. But each of their maps looks so different that it is very hard to know whom to believe.

Perhaps the most credible Great White Hunter to offer his services recently is Microsoft's Bill Gates, who at last month's PC Forum, in Tucson, Arizona, outlined his route for this safari. Although some of the landmarks on his map sound like things Microsoft has talked about before, he gave us some new names for them. WOSA, or Windows Open Service Architecture, describes a scheme whereby Windows and Windows NT will offer application programming interfaces or APIs (only they're now called SPIs, for service provider interface) for such back-end services as messaging, directory services, software licensing, print services, distributed security, and more.

Deeper into the heart of darkness lies Cairo, a sort of next-generation OLE that will offer an object management and file system for a true, native distributed computing environment. (And any distributed computing environment we discover is going to have to be a native one, because the natives are going to be restless enough.) The picture isn't entirely clear, but it sounds like Cairo is just about right where we want to be, or at least certainly in the right jungle.

But there are some warning voices that we must heed or ignore at our peril. I heard one such voice of doom the very same day that Gates sounded the call for his march on Cairo. It was at a cocktail party that night in Tucson, in the person of the president of a small, one-product software development outfit. Basically, he was disturbed and very confused.

"I'm just not sure what's the best thing for someone like me to do," he told me. "Everybody has a different platform that they say we should develop products for, but most of us don't have the resources to commit to more than one. And if we commit to the wrong one, we're dead."

The developer, who did not wish to be identified, has struggled with this type of problem before. His product occupies a rather specific niche in a broader productivity software category in which Microsoft has a Windows product. For that reason, he sank some of his development resources into an OS/2 product rather than Windows. Finding no market there, he reversed course and just recently brought out a Windows version of his product.

It doesn't really matter how good any one vendor's plan sounds, it will be the wrong one if a lot of other folks do not come along for the ride.

Now he's having trouble convincing the market that his product is not really a direct competitor of Microsoft's. His DOS version is keeping him alive for now, but he knows he either makes the right choice about the next platform he develops for or risks getting eaten alive. It is a jungle out there, after all.

"Next week, somebody else will be pushing another bunch of acronyms," he said. "And that will sound good, too. But how do you know what's going to wind up being real in the end?"

Large corporations determining their own enterprise strategy face a very similar dilemma. Basically, they don't want to jump on the wrong jungle boat any more than the fellow I met. No matter how good any one vendor's plan sounds, it'll be the wrong one if a lot of other folks don't come along for the ride.

Take Microsoft's WOSA scheme, for example, and the messaging SPI, specifically. At this point, it is going in a very different direction from the OMG/V1M group, which includes Lotus, Borland, Novell, Apple, and IBM. Microsoft may have the clout to make its choice the winner anyway, or it may relent and go with the flow.

Or it might wind up leading some folks into a bad spot. The same can be said, of course, for IBM, Apple, Sun, DEC, and all the others who are preparing to lead an exploratory mission into this dark continent. And it's basically not a matter of who has the best technology, but who can get the most people to go with them. When the arrows start flying, after all, you're going to want to have as many fellow campers around you as possible.

Ed Foster is editor of InfoWorld. *Comments can be sent to* InfoWorld *or via MCI Mail (efoster 397-4470).*

INFO WORLD
MARCH 9, 1992
SUPPLEMENT

Multimedia



IBM's juggling act

BY ED SCANNELL AND LISA PICARILLE

The folks on Madison Avenue are working overtime again.

The same spinmasters that brought us the important-sounding concepts of the 1980s — like artificial intelligence and groupware — are gearing up to sell corporate America again. This time they're selling multimedia.

Like a handful of other billion-dollar companies, IBM is getting set to pounce on what it perceives to be a lucrative opportunity in American businesses for multimedia. This month and next the company will roll out a raft of hardware and software products

Inside...

- Apple's QuickTime
- CD ROM publishing hits a snag
- Microsoft's Rob Glaser
- MPC market heats up

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-- **Macworld**

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it announced last October, including the PS/2 Model 57M with all the multimedia trimmings.

But while IBM prepares to give corporate America the hard sell on multimedia — a market that company officials believe will grow by 50 percent in each of the next two years and be worth $35 billion by 1995 — it is long on promise and short on details of its desktop strategies .

"Adding media to the existing art form enhances the computer. By combining the two art forms, you really get some magic," says Mike Braun, assistant general manager of IBM's multimedia group, in Atlanta. "Many more people will see the benefits of computing, because the interface will be a lot more natural. We want to personalize the information revolution."

KALEIDA'S SCOPE. But the promise of multimedia is no short order. As the pitch goes, adding video, animation and sound capabilities (along with a pinch of pixie dust) to existing text and graphics products will make corporate users significantly more productive and creative. Multimedia will bridge the best technologies of computers and consumer electronics to provide corporate users with powerful but easy-to-use information appliances that increase their knowledge base. For developers, the market could be worth tens of billions by the middle of the decade.

"The short-term reality of multimedia is it is not a desktop technology yet," says Jerry Schneider, president of Schneider Computers Inc., a consultant in Burke, Virginia. "Areas like education and corporate training aren't very glitzy, but [IBM] is not wrong in going after them."

IBM's eventual goal is to develop tools and environments that enable applications to run across all hardware platforms belonging to IBM or those of its competitors. Big Blue hopes to accomplish this in large part with technologies being developed at Kaleida, a joint development venture with Apple Computer Inc., as well as with a couple of undisclosed internal projects. Products from these ventures are not expected to see the light of day for nearly three years.

Nevertheless, Kaleida is getting off to a slow start. Formally announced last July, the joint venture has yet to coordinate a management team that will direct scores of programmers to develop what appears to be a series of complicated technologies.

Somewhat held up by an extended investigation by the Federal Trade Commission, the fledgling company has yet to find a building to call its own or to formally hire the programming talent from within either IBM and Apple. Some insiders are saying if IBM and Apple cannot put the organization together in the next month or so, product development schedules may be affected.

ENTER ULTIMEDIA. Until it invents the future, IBM is doing the only thing it can do: selling multimedia-capable machines and waiting for smaller, more daring companies to deliver some breakthrough ideas that give corporate users a reason to buy them.

IBM must do what Apple and Microsoft have done so well for so long — sell users on the promise of future technologies, while delivering something that gives them a reason to believe. And IBM must generate some short-term revenues.

"What IBM has to do is build machines that have the infrastructure to support multimedia. That lets smaller companies come up with some creative applications," notes one PC industry analyst. "But that means they must produce a robust multimedia machine."

The PS/2 Ultimedia Model 57M appears to have everything a user needs to take advantage of the few commercially available multimedia applications. Based on IBM's own 20-MHz 386 SLC chip, the system has a built-in CD ROM and is bundled with DOS 5.0, Microsoft's Windows 3.0, and Multimedia Extensions for Windows 1.0. It has 4 megabytes of internal memory, an 80-megabyte hard disk drive, and VGA display.

The system will work with all of IBM's existing and promised multimedia add-on products including the multimedia extensions for OS/2 2.0 — which are more robust than Microsoft's — expected in the next couple of months.The system also works with the ActionMedia Display Adapter, which compresses and decompresses video, audio, and still images. The latter product allows for digital video editing so users can create and customize their own applications.

Another interesting but untried product is IBM's PS/2 TV, which company officials believe is the industry's first integrated computer and audio-video tuner. The product lets PS/2 users pick up television and video broadcasts and send those transmissions over local area networks.

Priced at $5,995 for a standard configuration, the Ultimedia Model 57M may prove a bit pricey for some corporate users. This has become significant in the past year with recession-weary users looking to buy low-cost clones instead of higher priced niche machines.

"This is not a good time to be selling expensive PCs to corporations, which are beginning to question the value of PCs in terms of productivity," says Paul Saffo, a research fellow at the Institute For the Future, in Menlo Park, California, who points to a $5 million study released last year by M.I.T's Sloane School showing that workers using PCs were much less productive than expected.

Undaunted by the trend among corporate users for lower cost hardware, IBM officials say acceptance of the Ultimedia Model 57M has been good among those users it is aimed at.

"The reaction we've had is spectacular," IBM's Braun says. "We think it will sell well to its target market. It is not a machine for everyone."

HIGH GRADES IN SCHOOLS. IBM's most visible success thus far has becn in the educational market, specifically grades K through 12. Company officials say that 20 percent of all American school children learn to read and write using IBM products such as "Writing to Read." As part of IBM's Discoverer's series this year, it has publicly demonstrated multimedia programs for education that run under OS/2, programs such as Columbus and Ulysses. Many observers believe a couple of the programs are landmark multimedia applications.

But it is not clear how IBM can quickly transfer this impressive technology from the education to the business markets. Late last fall, IBM began an agreement with PictureTel Corp. of Peabody, Massachusetts, to jointly market the latter company's multimedia product that lets users create full-motion, dial-up videoconferencing with PCs over digitally switched telephone lines. The cost of a coast-to-coast videoconferencing call on a digital network is approximately $20 an hour.

Expected to ship this spring, the unnamed product lets PC users meet face to face and send each other documents and even stored video clips. Many observers believe it is this sort of multimedia application that will be the first to be widely accepted by corporate users.

IBM officials do not appear overly concerned with the lack of a cohesive multimedia strategy for corporate desktops. They seem comfortable in the belief that they are making good progress — and money — selling multimedia products for applications such as corporate training and public information kiosks that educate people about various state and federal institutions and procedures.

"We are going after those markets first where we think there are some of the bigger opportunities," says Peter Blakney, manager of marketing support for IBM's multimedia division.

One of the larger opportunities IBM is pursuing is a deal with the state of California, which is looking to install 20,000 to 30,000 PC-based kiosks. As part of the state's InfoCalifornia project, the kiosks are intended to help agencies and citizens more quickly expedite processes such as paying traffic fines and renewing licenses or how to get welfare services.

"When you have something like InfoCalifornia, where you are looking at 20,000 units priced at $10,000 each, that can add up to some big money," Blakney says.

SHUNNING THE MPC. As the multimedia market begins to emerge, IBM may find it has a lot of company. From the start, IBM

IBM has demonstrated impressive education titles, including the Discoverer's series.

SARAH BERTAGNI/ INFOWORLD

We've had great response. We think [Ultimedia] will sell well to its target market.

Mike Braun

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has shunned participation in the Multimedia PC (MPC) Council, a loose collection of hardware vendors along with the system software giant that has agreed on a set of low-end technical standards for multimedia products. Because the specification orginally included 80286-based machines, IBM believed the basic specification should be a lot more robust and refused to join or be baited into competition at that level.

"We looked at the sweet spot for configuration and price to meet customers' needs and that machine was the [80386-based] Model 70-A21," Blakney said. "It doesn't take a rocket scientist to see this home-entertainment market is unquantified. Why would we get into that when bona fide customers [at the higher end] are buying applications and getting real benefits?"

Taking a skeptical view, Blakney believes the MPC is simply a vehicle for the participants — who must be able to afford the $250,000 membership fee — to promote their own multimedia products.

"The only unique product in the entire [MPC] configuration is Microsoft's Windows. Everything else is generic to the marketplace," Blakney said. "We have thrown our efforts behind the IMA [Interactive Multimedia Association]." That organization focuses on cross-platform compatibility.

While some observers agree IBM may be better off pursuing more defined multimedia markets than those in the low end, others insist it shouldn't take its eye off what Apple and Microsoft are doing there.

Other than its efforts through MPC, Microsoft is rumored to be considering deals with Tandy, which is expected to announce by midyear a CD ROM-based box that works with consumers' television sets. Microsoft wants to bundle a ROM version of Windows with the system, giving the graphical environment its first broad-based access to consumer markets.

Just last month rumors surfaced that Microsoft was talking with Nintendo Inc. about its considering expanding its extremely successful game machine into a more conventional desktop computer, adding memory and a disk drive. Again, Microsoft is exploring the possibilities of bundling Windows with such a system, but nothing has been settled.

Apple, while it is working jointly with IBM through Kaleida on a low-end product, is pursuing multiple low-end relationships with General Magic Inc. and is rumored to be working on one with Sony Corp.

Some IBM insiders over the last month or two have expressed concerns that Apple will take technologies developed at Kaleida and aggressively use them with other partners such as Sony to go after low-end markets.

IBM insiders feel their company should be more aggressively positioned to take advantage of opportunities in the lower end market.

IBM has to build machines with the infrastructure to support multimedia. That means they must produce a robust multimedia machine.

"I am waiting for what will come out of the Apple-Sony alliance. That should prove to be more important [than the IBM-Apple alliance] for multimedia," Saffo said.

The only prospect IBM has for a low-end system is its PS/1, which the company has beefed up considerably during the past few months. IBM will even bundle OS/2 2.0 with a model that is expected to be shipped in April.

Despite those improvements, most observers say the PS/1 needs a lot more built-in hardware capability if it is to have a future in multimedia.

"[The PS/1] needs a whole lot more expandability like built-in SCSI that the machine, in its present configuration, can't support," said Schneider.

If and when it decides to pursue a more aggressive low-end multimedia strategy, IBM must adopt a consumer electronics mentality. Much of that mentality, according to some, revolves around learning from mistakes and coming back quickly with improved products.

Some believe if the company had done so back in the mid-1980s with its PCjr, a low-end PC aimed at the home, it might have a meaningful presence in the low-end multimedia market today.

"If a consumer electronics company delivered the PCjr and failed, they would have taken their licks and come back nine months later with an improved machine," said one analyst. "But IBM just said, 'OK, we tried, but I guess there is no market there,' and it was years later before we heard from them." □

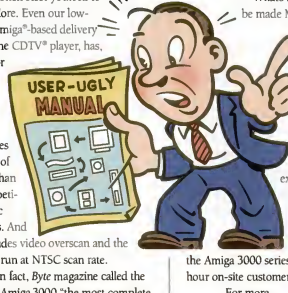
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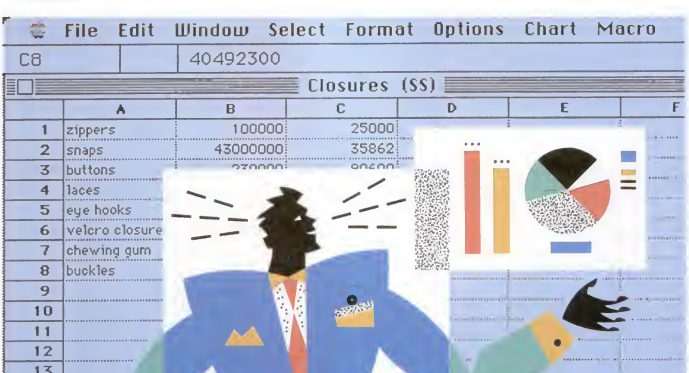
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TECHNOLOGY



QuickTime steals the spotlight

Apple's multimedia architecture transforms business presentations into Oscar contenders

BY STEVE ROSENTHAL

When Apple Computer says its new QuickTime architecture opens up a whole new dimension in software, they mean it literally. For the first time, a mainstream desktop operating system is adding full support for documents that extend in time as well as space. What does that mean for Macintosh users? It means movies.

In practical terms, the announcement — made formally at the January MacWorld Expo — means most Macintosh business applications that display static pictures will soon support moving animations and television-style video images. New motion-based applications, such as videoconferencing, will become more practical. And graphics software development should be faster because QuickTime system services will handle details such as synchronization, compression of both still and moving images, and a standard player user interface. And with the expected arrival of a set of cross-platform QuickTime tools, it will be practical to exchange moving documents between the Mac and other popular systems.

In other words, practically everyone can become a movie producer. "We're already using it in a number of applications," says Thel Rountree, multimedia producer/director with Hughes Aircraft Ground Systems Group, in El Segundo, California. After having successfully added motion segments to speaker support graphics, the company is currently working on computer-based training and interactive kiosks.

Dr. Allen Shelton, an ophthalmologist in Los Angeles, uses QuickTime to create a rough cut of surgical movies. "It allows me to preview what the final edit will be," he said. "If I don't want to do that edit myself, I can take the QuickTime movie to an editor and say, 'this is what I want.'"

But using QuickTime tools and applications will not be limited to graphics applications. Several mainstream office-productivity applications such as WordPerfect for the Macintosh already include the capability to show QuickTime movies. And all major Macintosh software developers from Microsoft on down say they will do likewise in future software and in revisions.

For most users, QuickTime will involve moving images shown on-screen in their own windows, boxes, or frames within a larger application. Movies can contain a combination of sound, still images, animated graphics, or television-style photorealistic video. They can be used to personalize presentations and improve the effectiveness of a wide range of applications, according to developers.

"With QuickTime, you can have as close to a real person there as you need," says Sean Harrington, a media services specialist building an interactive kiosk for the Health Net health plan, in Woodland Hills, California. The company wanted a computer-based presentation system to assist company representatives in explaining the large number of options available in group health plans. Adding video clips of Health Net officials explaining the options will make the packages friendlier and more effective. And by using a PowerBook portable computer linked to a monitor or a portable overhead display screen, representatives will be able to bring the entire hardware package to customer offices.

> **The success of these QuickTime applications is beginning to influence corporate buying strategies.**
>
> *Doug Camplejohn*

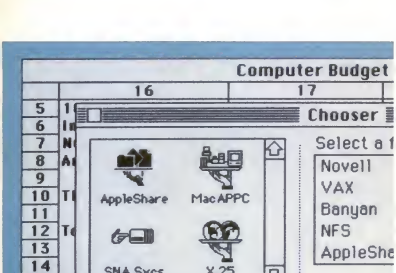
The success of these QuickTime applications is beginning to influence corporate buying strategies, according to Doug Camplejohn, Apple's QuickTime product manager. One major manufacturing firm purchased 200 Mac systems, reports Camplejohn, because it could distribute QuickTime movies over a network to shop floor locations and show machine operators and other workers how to make new parts.

OBTAINING THE PARTS. Users who want to view QuickTime applications will need the QuickTime System Extension, bundled free with most of the early QuickTime-aware applications and distributed on bulletin boards and through user groups. Cutting and pasting QuickTime movie files requires an enhanced Scrapbook, available from most of the same sources.

Later this spring, Apple plans to distribute through its regular channels an "under $200" QuickTime Starter Kit with the Extension, enhanced scrapbooks, sample applications, and a selection of clip media. Developers can already buy a QuickTime Developer Kit from the Apple Programmers and Developers Association for $195.

Apple plans to make QuickTime a cross-platform standard, says Camplejohn

We're open



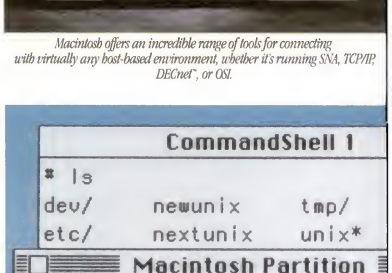
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john. The company will produce modules to create QuickTime still images and movies that can be integrated into programs on platforms ranging from IBM PCs to Crays. Apple has already announced a QuickTime movie player for Microsoft Windows, with other platforms likely to follow.

STANDARDS, CAVEATS, AND LIMITATIONS. In its current iteration, QuickTime has some limitations. For example, whereas the QuickTime code runs on any Macintosh with a 68020 processor or above and 2 megabytes of memory, the performance of some features — such as software-based decompression and playback of moving images — is significantly restricted by the processing and data transfer power of today's standard hardware.

Initially, movies will be small and noticeably jerky compared with normal television-style video. The goal may be to have what Lotus Development Corp. multimedia product manager Steve Barlow calls "full, full, full" capabilities — that is a full 640-by-480 screen, a full 16- or 24-bit color, and a full 30 frames per second of motion — but the exact results will depend upon the particular resources available on the playback Macintosh.

Without added hardware, for example, the Apple-supplied movie player will default to software compression and decompression of images, displaying the results in a 160-by-120-pixel window (one-sixteenth of the standard 640-by-480 screen area). When fed by a CD ROM player — which Apple and most developers believe is currently the only practical way to distribute large-scale digital moving images — the Apple routines will only be capable of pumping approximately 15 frames per second to the screen. (See sidebar, this page.)

But because the system takes care of synchronization and gives preference to audio, the displayed video stays in step with the sound. Furthermore, QuickTime's open architecture allows users to boost image quality by increasing the computing or data transfer power of the system.

Applications that use the Apple-supplied drop-in movie player and interface guidelines will present the movie objects with a VCR-like window — complete with a control bar for play and pause, sound level selection, and playback speed and position. The company is also supplying a complete set of human-interface guidelines for QuickTime applications to promote consistency among different packages. But Apple is publishing the movie format, and developers can do as they wish.

QuickTime includes image compression routines for still images, though their operation will be less visible to the user. As an option, any program that uses the system routines for storing and retrieving images in Apple's standard PICT format will be able to call on the QuickTime routines to compress and decompress the images.

INSPIRING THE MARKET: TOOLS AND APPLICATIONS ARRIVE. More than 160 applications have already been registered with Apple as QuickTime compatible, according to Apple's Campbejohn. But that list is only a beginning. "By this time next year, we expect everyone who's cutting and pasting PICTs will be supporting QuickTime," he says. Some of those applications will make extensive use of QuickTime, and others will be tools for developing and supporting QuickTime movies.

For example, most animation and presentation tools will support QuickTime movies as an input or output data type. Programs such as Cinemation from Vividus Corp. in Palo Alto, California, and PowerVision from Knowledge Vision of Myrtle Beach, South Carolina, will let users produce extensive sequenced presentations and then export them as QuickTime movies. MacroMind Director will also provide extensive support for QuickTime, even allowing several QuickTime movies to play back simultaneously. Aldus Corp., based in Seattle, will include QuickTime support in Persuasion 2.1 sometime during the first quarter.

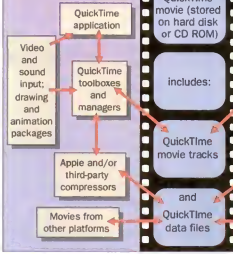
QuickTime will also be a feature in most database and information applications. Acius Inc. of Palo Alto, California, has added an external routine that can display QuickTime data, as has Odesta Corp. of Northbrook, Illinois. Several HyperCard XCMDs also display QuickTime movies. Claris Corp. of Santa Clara, California, plans to distribute an XCMD with the standard HyperCard Development Kit.

Major word processing packages are also adding QuickTime support. WordPerfect Corp. of Orem, Utah., has already included QuickTime capabilities in WordPerfect 2.1 for the Mac, and Microsoft promises QuickTime support for Word, Version 5.0 by the end of the first quarter.

Many educational and game programs are turning to QuickTime, though some games will continue to use dedicated routines for faster throughput in preference to QuickTime's greater flexibility. Kid Pix, Broderbund's highly acclaimed children's drawing package, will add a QuickTime supplement by the end of the first quarter. Compton's New Media will add QuickTime sequences to the Firm's MultiMedia Encyclopedia later this spring.

For dedicated QuickTime editing programs, Adobe Systems Inc., based in Mountain View, California, offers its Premiere software, which was previously bundled free with the initial shipments of the VideoSpigot video capture board from SuperMac. And VideoShop from Digital Video Applications Corp. (DiVA) of Cambridge, Massachusetts, is scheduled to ship in the first quarter.

The ins and outs of QuickTime



SARAH BERTALACCHI / INFOWORLD

Looking under the hood

In its largest context, QuickTime is an entire architecture for dealing with data types, program objects, and time synchronization, says Apple's QuickTime product manager Doug Camplejohn. But in practical terms most users and developers will see the software as a new set of data types and standard system services.

At least initially, QuickTime "movies" will be the most visible of these new data types. From the user's point of view, the movie will seem to contain the complete set of images, sounds, and any other time-based elements for display on the screen. Just as with compound static graphics documents, they'll be created primarily with special movie editors or generated automatically as the output of an application, such as a database program.

From the system's point of view, however, the movie format is more like a production script than a complete record of the performance. The movie actually contains an open-ended number of parallel tracks containing pointers to production elements, rather than the elements themselves. That allows a small movie file to make use of lengthy shared resources and provides for future expansion in the number of included data types simply by adding more parallel tracks.

By design, QuickTime movies are "scalable." When a movie file is passed to the QuickTime system services, those routines deliver as close to the requested playback as the available hardware allows. As necessary, this includes selecting a decompression module to expand the data from a compressed format, dithering down the number of colors in the image to the available display resolution, and skipping over some video frames to keep synchronization with audio or other elements.

Compression is a key element of the scheme because most time-based elements and full-color images require data streams that are quite large compared with the current capabilities of PC-class machines. A complete television-style image, for example, requires 18 to 33 megabytes per second. A detailed color slide can take upwards of 20 megabytes.

Apple is initially supplying three codecs (compressor-decompressors) with QuickTime: a still-image codec based on the Joint Photographic Experts Group (JPEG) standard; an animation codec for 256-color draw images based on run-length encoding (RLE), and a television-style video codec using a proprietary Apple algorithm. But the company is also encouraging the development of third-party codecs, especially those that will use hardware add-ons for higher-quality images or faster frame rates.

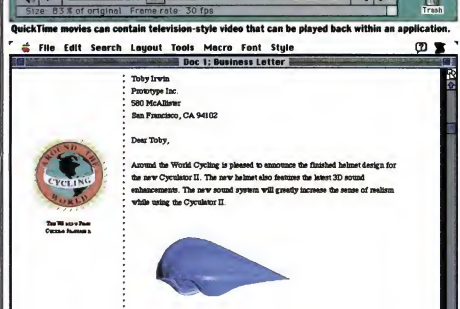
At last a half dozen such alternatives have been announced or exhibited in concept, but the first actual shipping product is expected to be the EyeQ, a $2,495 to $3,295 NuBus board from New Media Corp. of Venice, California. The company says the board will provide full-screen, full-motion video with "near VHS quality."

QuickTime's four major components

System software	•Movie toolbox: creation, editing, and playback of movies •Image Compression Manager: shields applications from compression algorithm details •Component Manager: shields applications from external device details (e.g. digitizer cards)
File formats	•Movie: new file format for dynamic data •PICT extensions: compression and preview support
Apple compressors	•Photo compressor •Animation compressor •Video compressor •Graphics compressor
Human Interface	•Standard movie controller •Extended standard file dialog box with preview •Guidelines for compression, capture, and more



QuickTime movies can contain television-style video that can be played back within an application.



QuickTime lets users record and digitize animation and sound clips to add to documents.

HARDWARE, HARDWARE, HARDWARE. To produce television-style video sequences for use in QuickTime movies, additional hardware and software are generally required. Most current video capture boards will soon have software drivers to produce QuickTime images, and several third-party vendors are also delivering boards designed for the abbreviated images and slow frame rates that will work with current playback systems.

SuperMac Technology of Sunnyvale, California, for example, offers a low-cost ($499 to $599) digitizer line and other more costly ($1,899 to $1,999) models that include accelerated 24-bit display controllers. VideoLogic Inc. of Cambridge, Massachusetts, offers a high-end board that includes graphics and video overlay. Radius TV from Radius Inc. of San Jose, California, also supports QuickTime, as do several video input products from RasterOps of Santa Clara, California.

Makers of video editing systems also see QuickTime as a way to shuttle around electrons instead of tape reels. Digital F/X of Mountain View, California, and Data Translation of Marlboro, Massachusetts, expect to deliver QuickTime-based software for use with their editing systems during the first quarter.

QuickTime will even be used for video communication and enhanced electronic mail. Compression Labs, based in San Jose, California, has demonstrated the MacVideoPhone1, a $1,459 system that lets users transmit compressed video over standard telephone lines with optional recording as QuickTime movies.

CLIP ART FOR COLLECTORS. Users who prefer to start with clip-art images rather than record and digitize their own material will also have a number of choices. Apple plans to provide a basic collection of clip sequences in its QuickTime Starter Kit, and other vendors are quickly readying their own collections.

Alpha Technologies Group of Marriottsville, Maryland; Compact Design of Gaithersburg, Maryland; EduCorp of San Diego; and Form and Function and MacroMind-Paracomp of San Francisco, all have QuickTime clip-media CDs already on the market. Even BMUG, the Berkeley (California) Macintosh User Group, has produced a disc called TV-ROM, which includes public-domain video clips and animations that run with Apple's QuickTime.

A BRIGHT FUTURE. According to Apple's Camplejohn, it's far too early to see the full potential of QuickTime. Apple's emphasis in future development will likely be to combine communications and QuickTime, including networked and client/server applications. A QuickTime connection to the new VMI electronic mail interface standard is likely, along with an extension of the QuickTime Movie format to include tracks for factory automation and other control-based data.

Thanks to the open-ended nature of the Component Manager module inside QuickTime, links to pen-input computers and three-dimensional graphic controllers are also strong possibilities.

Third-party applications will also extend into new areas, opening up new opportunities for developers of both applications and tools. The limits to what will be done with QuickTime are not yet in sight: The current leading-edge applications range from some experimental programs that recognize scene changes for video logging to data models that recognize and record the content and context of video clips.

"I think you're going to see QuickTime having a profound effect on anything you plug into the Macintosh," Camplejohn says. "We're on the cusp of some new paradigms." □

Steve Rosenthal is a freelance writer based in Berkeley, California.

QuickTime competitors readying alternatives

While no other architectures for time-based documents on the scale of QuickTime have yet emerged, several companies have announced or delivered products that speak to similar issues but take different approaches.

Microsoft's Multimedia Extensions for Windows support video and sound capture, editing, and playback, for example, but the company freely admits the current system is not as advanced as QuickTime. The Microsoft approach, which was originally developed with IBM, includes an overall file format, a synchronization layer, and a framework for installing video, audio, and device control drivers.

The Windows extensions were first delivered last year and will be included in Windows 3.1 when that program is released next month. In the meantime, Microsoft has rallied the support of both software developers and hardware suppliers, and many of the major application publishers are building support for the extensions into their software. The extensions are the software side of the Multimedia PC specification developed by Microsoft and PC hardware companies.

However, Microsoft's only announced movie format so far is audio-video interleaved (AVI), a compressed format fixed at run-length encoding (RLE) compression and a maximum of 256 colors. Within those parameters, the result is as good or better than any other desktop media system, according to Microsoft product manager Patrick Ford. But it's only a start, he concedes. Further work has to be done before Microsoft is ready to deliver a complete time-based media solution.

Using Windows as its platform, Fluent Machines Corp. of Framingham, Massachusetts, has released a software architecture for time-based media called Fluency, along with its Fluent-Streams software tools and VSA-1000 board set that saves and plays back audio and video. The architecture is designed particularly to facilitate network applications such as video-enhanced electronic mail and client/server applications. According to officials at Fluent, many of the more popular PC-based multimedia authoring packages will support the architecture and hardware, though it has yet to demonstrate a wide variety of off-the-shelf solutions.

IBM has adapted much of the material it developed with Microsoft to its own set of Multimedia Extensions for OS/2. Available now only as beta tools for third-party software developers, IBM's extensions make use of structures that are similar to their Windows predecessors, though some observers contend they are much better suited to multiprocessing and distributed applications.

The Philips/Sony CD-I (Compact Disc-Interactive) and the Commodore CDTV interactive formats can also be considered multimedia architectures. But CD-I, which is based on its own real-time operating system, lacks end-user tools. CDTV, which combines CD ROM XA-compatible interleaved data on CDs with the Amiga operating system and hardware, has so far concentrated on the home entertainment market rather than on business.

INDUSTRY

Electronic publishing faces legal traps over copyrights

Vague copyright laws raise concern among authors, artists of having materials published on CD ROM technology

BY PAUL KARON

If you were hoping to peruse the Louvre or scan photographic collections from the comfort of your multimedia PC, you may have to wait a while.

Publishers of electronic books, photographs, and art collections are finding it isn't so easy to get licenses to copyrighted material from the authors and artists who own them. Consequently, eager customers of multimedia products may have to wait till the copyright issues are better understood.

"It's just going a lot slower than it otherwise might be," says Brian Kahin, general counsel for the Interactive Multimedia Association (IMA), a Washington-based trade association of 200 companies involved in multimedia. "There is frustration perhaps on both sides."

"Without question, it is a major barrier to the development of the industry," agrees Barbara Zimmerman, president of BZ/Rights & Permissions Inc., a New York-based copyright licensing agency. "There's not a lot of constructive communication going on right now between the CD ROM people and the copyright owners."

The cloudy copyright laws have made many owners of rights to photographs, books, music, and other materials suspicious of CD ROM firms.

"[Copyright owners] don't want to sell their rights down the river, and they're not sure what they're selling," says Nora Cannon, a lawyer for King & Ballow, a law firm handling many information-transfer clients. "There isn't a vocabulary for CD ROM sub-rights, and there aren't established price points. The lack of clarity in these areas has created a certain amount of friction between rights owners and CD ROM publishers."

Much of the difficulty can be traced to a lack of understanding among people in different lines of work. Museums, for example, have been approached by electronic publishers seeking to put photographic reproductions of art collections on CD ROM. Microsoft Corp. chief Bill Gates started one of the firms, Interactive Home Systems Inc. (IHS) of Redmond, Washington, to license and produce the electronic art collections. But like other copyright owners, museums were circumspect about the new technology — and were not sure just how much they might be selling when they awarded CD ROM rights.

"When IHS first entered the museum market, they tried to solicit exclusive electronic rights to whole collections," says Lenore Sarasan, president of Willoughby Associates Ltd., a Chicago museum consulting firm. "Museums are generally suspicious of outsiders from the profit sector."

However, museums failed to see that for a CD ROM to be successful, a company like IHS needs to offer a large number of images. From their perspective, the value per image declines, Sarasan says. But IHS has lately retrenched and begun saying they are interested in non-exclusive, nonpermanent rights to art reproductions, which makes curators more comfortable with CD ROM, Sarasan says.

According to some copyright owners, multimedia firms have at times demonstrated a failure to understand the costs and the value of the content they want to purchase. "In every case, their standard license calls for the CD ROM company to receive all electronic rights, forever," says Michael Mellin, publisher of the Random House Reference and Electronic Publishing division, in New York. "They go for the moon, but they get a measure of distrust along with it."

Another of the copyright owners' greatest fears is an echo of the issues that accompanied the advent of cassette tape recorders in the music industry: easy reproduction of the property. Copyright owners are afraid that computers with high-resolution monitors and laser printers will enable any computer user — licensed or not — to reproduce the information or images. Such uncontrolled reproduction would dilute the value of the material.

"Copyright literally is the 'right to copy,'" Mellin says. "When you put something in an electronic medium it gives anybody the ability — but not the right — to copy it as much as they want. That dilutes the value of the material."

Professional photographers are also acutely concerned with the safety of their copyrights — and for good reason: The majority of photographers draw a significant portion of their income from relicensing stock photographs. In photography, like book publishing, licensing practices have traditionally been based on print media.

"This has worked fairly well — up to now," says Nathan Benn, who has been a National Geographic photographer for 19 years. But now, Benn says, "Enter electronic media."

CD ROM and related computer-display technology are another story. Like book publishers, photographers worry about the ease of unapproved reproduction of their images that electronic publishing makes possible. But this may be one of the simpler issues.

Benn and other photographers are trying to flesh out a new set of copyright arrangements for photographs that take into account not just the number of copies of an image, but also the manner in which the images are used. Called service rights, this sort of licensing has been going on in the music recording industry for years, managed by a company known as ASCAP, which figures copyright fees depending on where and how the music will be played — whether, for example, in a radio broadcast, as background music in a restaurant, or for home use.

"As photographers move into the environment of electronic media, we see that the same paradigm needs to be applied," Benn says.

Benn's interest in these new copyright issues prompted him to start the Electric Book Co. The 2-year-old firm seeks to become a sort of photographic ASCAP — a domestic and international licensing agent between photographers and CD ROM publishers. Although Benn's initial motivation was to protect photographers like himself, he and CD ROM publishers both say the relationship between copyright holders and CD ROM publishers is not fundamentally antagonistic: It is in everybody's long-term interest, they point out, to establish a rational and solid copyright practice.

> **When you put something in an electronic medium it gives anybody the ability — not the right — to copy it as much as they want. That dilutes the value of the material.**
>
> *Michael Mellin*

"At this point, there's a very broad-based recognition of the need for a licensing entity to deal with electronic media" Benn says. "The electronic publishing people want an orderly and legal way to acquire the content."

Blake Lewin, director of licensing for Warner New Media, a publisher of CD ROMs, agrees that the clarification of copyrights is one of the industry's primary tasks right now. "It will affect the direction some things will take," Lewin says.

The task before both parties now is coming to a better understanding of each one's position. "At this point, as early as it is in the industry, a lot of education has to take place," Lewin says.

But the education must take place on both sides, says Stephen Arnold, president and CEO of Gates' IHS. "It's a matter of acknowledging the interests of both sides and coming up with solutions that protect the interests of copyright owners, as well as allowing them to participate in the new technology."

This process has already begun. Museums, for example, have been approached by electronic publishers seeking to put photographic reproductions of art collections on digital media. IHS was one of those firms.

Broad, industrywide efforts toward an accord on copyright issues are also under way. Representatives from the trade group IMA, and those from book, music, photographic, and other businesses, have joined a task force formed to explore the issues of intellectual property involved in CD ROM, says the IMA's Kahin.

"One of the main objectives is to come up with a better understanding of the licensing issues from both perspectives," Kahin says. "We are looking for some common ground philosophically," agrees Jane Kinne, vice president of Comstock Inc., a New York stock photography agency.

"Most [CD ROM publishers] I talk to are very interested in having the industry get together to make some practical [licensing] standards," Kinne says. The electronic publishers need the agreement partially as an insurance policy against future legal action. "They're not interested in investing a lot of money in a product that is going to be shot down a couple of years later in a lawsuit."

IHS' Arnold agrees. "We expect the relationships we develop with the organizations, institutions, and the individuals who license their material to us to last a long time." □

Paul Karon is a Los Angeles-based freelance journalist and screenplay writer.



INTERVIEW

Microsoft's Rob Glaser: viewing multimedia

Nine-year Microsoft veteran, Rob Glaser now sits at the controls of the company's multimedia systems machinery. On the eve of the annual Multimedia and CD ROM conference, InfoWorld *Multimedia Supplement editor Laurie Flynn spoke with Glaser about Microsoft's far-reaching, and obviously influential, view of multimedia computing.*

IW: In Microsoft's view, what is the significance of the Multimedia PC (MPC) specification?

Glaser: A standard infrastructure is required for multimedia applications to flourish.

The MPC specification defined the hardware "lowest common denominator" for both development and deployment of multimedia applications. From the standpoint of the developer, it's now possible to deliver multimedia applications — applications that exploit audio, animation, and motion video and that deliver hundreds of megabytes of content — on systems that are enhanced configurations of the industry-standard PC architecture. From the standpoint of the user, a major benefit of buying MPC-logoed equipment is the confidence that all of the pieces are there and that they all play together. You don't have to worry that the total is less than the sum of the parts.

A second infrastructure element that will help accelerate the adaptation of multimedia applications is Windows 3.1. Windows 3.1 will include all of the multimedia application programming interfaces (APIs) that were first delivered as part of integrated Multimedia PC systems late last year.

IW: What kind of demand do you see for MPC machines in the business market?

Glaser: The MPC market is as horizontal as the PC market. Windows-based MPCs will play in the home market, the education market, and the business market.

In terms of specific business applications, we see a lot of in-house or vertical multimedia software development, but we also see several categories of shrink-wrapped applications that are substantially improved through multimedia techniques. One area is presentations, a second is tools for training, and a third is electronic mail. More generally, any productivity application that supports the Object Linking and Embedding (OLE) architecture can easily incorporate multimedia data types. A wide range of Windows-based productivity applications such as Lotus Notes and Microsoft Word and Excel already support OLE, which makes them "multimedia ready" today.

IW: Many industry observers point to Apple's QuickTime as a model for synchronizing time-based events. How do you respond to that? What are your specific plans?

Glaser: We've tackled some things in our first release that Apple didn't tackle in its first release, and vice versa. It's a marketplace where technology is independently moving forward on both the Windows and the Macintosh platforms.

Apple's doing a great job of marketing QuickTime. One QuickTime feature that's very evocative is software motion video. But when you look closely, there are a number of footnotes. The QuickTime movie format runs optimally with a 24-bit graphics card, which is still a high-end solution. Most of the feedback we've gotten from people using the more common 8-bit video cards is that QuickTime's dithering looks very grainy.



ROBERT PIZZO

Our approach to software motion video has been to create an open architecture, the Media Control Interface, that enables individual developers or customers to plug in their own scheme for time-based data types, including digital motion video. Microsoft has a software video codec (compressor-decompressor) under development, which we call AVI (audio-video interleaved). We hope to deliver AVI toolkits to developers by midyear. We're working hard to make AVI a solution for a broad range of situations, including normal 8-bit VGA+ (Super VGA). We're even working on Windows-legal techniques to flip old IBM 4-bit VGA systems into low-resolution 8-bit mode. Of course, we look forward to the day when IBM follows the lead of the rest of the market and stops shipping 4-bit VGA systems entirely.

We understand that different applications will require different approaches to digital motion video. Some people will be perfectly happy with software-only schemes that run at 10 to 15 frames per second in small windows, while others will require full-screen video at 30 frames per second. In order to support this range we've worked with Intel and other vendors to create a standard MCI command set for digital video. This means that from the standpoint of application developers, they make the same MCI call and it will work regardless of whether the codec installed is just pure software like AVI, or a hardware-assisted digital video scheme such as Intel's DVI.

IW: What's next for Microsoft in multimedia?

See GLASER, page 572

ANALYSIS

The MPC market (and marketing) gathers steam

BY LAURIE FLYNN

It wasn't too long ago that "Beta" referred to a type of video recording specification competing with VHS. Now the purveyors of MPC titles and equipment are hoping competitive multimedia specifications take a similar course into oblivion.

And they may just get their way. Despite any perceived shortcomings, the Multimedia PC (MPC) specification seems to be achieving what it set out to do. Multimedia developers appear to have greater confidence to create titles, applications, and tools, and Windows appears poised to own a large share of yet another new market.

"MPC did a great industry service by nudging some people and saying, 'let's get on with it,' " said Philip Dodds, head of the compatibility project of the Interactive Media Association (IMA), a trade organization of multimedia vendors that seeks to improve cross-platform compatibility in multimedia.

The specification calls for a minimum 386SX CPU, a CD ROM drive, waveform and CD audio, and Microsoft Corp.'s Windows with Multimedia Extensions.

"It's a matter of time before [assistant general manager of IBM's multimedia group] Mike Braun realizes that the Ultimedia PC is too expensive and they have to develop an MPC solution," says Paul Jain, president of Media Vision Inc., the Fremont, California-based supplier of MPC upgrade kits. "It's another case where Windows has won." IBM's multimedia system uses IBM's own SLC chip and is priced at $5,995.

BAIT AND SWITCH? But as important as the development threshold is, the specification still evokes some skepticism. "The original idea of a trademark was explained to me as something like VHS, for giving customers confidence," Dodds says. "The difference is VHS has remained the same, whereas MPC is still evolving," he adds, referring to the MPC council's decision late last year to up the specification from a minimum 286 system to a 386SX. Although this change was not controversial in itself, the fact that the specification changed at all has some observers wary of what lies ahead. "It suggests that next year they're going to do that again, on something," Dodds says.

"Watch out for the next bait and switch," says Rob Lippincott, director of product development in Lotus Development Corp.'s multimedia product group. The MPC sticker is really an advertisement for Windows 3.1, he says.

"Certainly we think the MPC and the extensions are great steps in the right direction," Lippincott says. "They've begun to describe something, and software developers can develop to that set of peripherals. But it's very focused on getting people to buy Windows. It's trying to reach a broad spectrum of users and therefore doesn't reach any customer very well," he adds.

As specifications go, the MPC is not particularly demanding. "[MPC] is not really controversial or exciting," Dodds says. "Everybody I know is in support of the pieces." Rather, the debate today surrounds marketing issues, such as the requirement that vendors pay $250,000 to carry the MPC logo and, until recently, what the minimum configuration should be.

NOT THAT EASY. But just who will buy MPC machines is still a matter of debate, as is exactly how fast the market will evolve. "I think what we are finding is there has been a real latent demand for CD ROM and audio boards, but I'm not sure how much that has to do with MPC," Jain says.

These other applications are CD ROM-based productivity packages, such as multimedia versions of standard spreadsheets and word processing documents. Jain thinks

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GLASER

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Glaser: We've made a lot of progress, but there's a lot of work to do. The most specific short-term deliverable [product] is the AVI toolkit, but we've got a lot more in the pipeline. The multimedia work that we're doing in the area of traditional personal computing is super important, but it's only the visible piece of the iceberg. The less visible part is creating enabling systems software for new kinds of devices, which are personal computers on the inside, but that from the outside look more like appliances that happened to use digital storage and manipulation techniques. There are a lot of people working on very interesting hardware, some of which will be announced later in 1992, and some in 1993. Some may even be announced at the Multimedia and CD ROM conference.

IW: What will Microsoft be providing?

Glaser: With regard to new digital appliances, Microsoft has a lot of work going on. Some of it's pure research, done under [Microsoft developers] Rick Rashid and Nathan Myhrvold. Certainly one contribution we can make is to provide a bridge for customers and software developers between Windows-based PC products and these new digital devices. The user paradigms and metaphors may be quite different on these new digital devices, but there are lots of cases where data interchange and common authoring tools will be valuable. Because of the layered way that MS-DOS and Windows have been developed, our current technology is surprisingly adaptable. □

MPC

Continued from page 571

that will change by the end of the year, as the scores of MPC titles now in development reach the market, delivering everything from encyclopedias to MPC-enhanced electronic mail.

Until then, however, the first wave of applications will be aimed at education and consumer market, says Glenn Ochsenreiter, director of the MPC Marketing Council.

Then there's the upgrade issue. The MPC specification may simplify multimedia technology for PC managers confounded by the huge array of component options and hype, but turning a standard business computer into an MPC machine is anything but easy. "The upgrade business is a lot more complicated," says Mike Grubbs, senior director of marketing for Tandy Corp., in Fort Worth, Texas. "We'd like to say, 'Go plug this in and you're up.' But it's not that easy."

Even Media Vision's Jain agrees. "It's not easy to upgrade," he says. "It's still the biggest objection people have." To simplify matters, Media Vision is readying a new twist on the upgrade idea, called the CD PC, which is a MPC subsystem minus the microprocessor.

Although the technical requirements for an MPC-compatible system are not high by today's standards, the fact that virtually every element of a PC's technology is affected makes upgrading more complicated. For example, if you already have a CD ROM drive attached to your system, chances are it is not MPC compatible. That is not to say it won't run software written to the specification, but it may not run it well.

"Of the CD ROM drives in the marketplace, currently 98 or 99 percent are not MPC compatible," says Les Inanchy, marketing manager of Sony's CD ROM retail products. Many MPC titles will not run well on earlier CD ROM drives, particularly when it comes to synchronizing audio and video.

TRAINERS AND PRESENTERS. To date, relatively few MPC machines have been sold, although vendors contend that interest is very high in the marketplace.

"Practically every Fortune 1000 company has bought two from us to see what it's like," Jain says. The advent of Windows 3.1, with complete support for CD ROM drives, will create a much bigger demand, Jain adds.

"We're getting a lot of interest, but we haven't sold a lot of machines," says Steve Fritz of Dolch Computers, in Milpitas, California. "People are still trying to figure out what's going on in multimedia."

Dolch's systems, billed as the first portable MPC machines, don't actually carry an MPC label despite their conformance to the specification.

Like all multimedia technologies before MPC, corporate interest remains highest in the areas of presentation and training. According to Rana Minee, of market researcher Inteco, the prime market for MPC machines are managers and technical professionals, particularly now that the specification calls for a minimum 386SX machine.

Eventually, multimedia equipment now considered exotic will be part of the base PC requirement, the IMA's Dodd says. "By 1995 or 1996, people will stop talking about [MPC] because it will be mainstream." □



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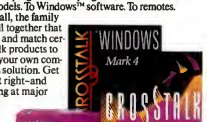
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TO THE EDITOR

Cringely's mailbag

Here's my response to the current raging Cringely debate in your Letters to the Editor column: Keep Cringely.

The recent putdown of Robert X. Cringely stated, "If I wanted humor, I could crank up my Laffer Utilities."

As author of The Laffer Utilities, I appreciate the support. But the first thing I read in *InfoWorld* each week is Cringely's column. While he may use his own name too often, what we readers really want is more information on Pammy.

By the way, Bob, *Accidental Empires* is a great book!

Al Lowe
Creator
Leisure Suit Larry

Robert X. Cringely's comments may be slanted, biased, and inappropriate (sometimes all three), but that makes his column the most entertaining by far. His "rumors" have alerted us to industry trends, concerns, and problems. Without his column, I won't read *InfoWorld*.

Ted Roche
Manchester, NH

Cringely is the first thing I read every week — without fail. He is wonderfully irreverent. Keep him.

H. Kelley
Norwood, MA

Please keep Robert X. Cringely's column. His spot at the end of your excellent publication provides the same lift to many spirits as the end of a long day.

Dick Brich

Concerning the letters of Mr. Peterson and Mr. Miller regarding Robert X. Cringely in the February 17 issue — lighten up guys! Remember Mae West's words concerning the infamous Hayes Commission, which sought to censor her films: "People who are easily shocked . . . should be shocked more often."

Peter C. Rugen
Stamford, CT

I am responding in defense of Robert X. Cringely. Cringely's column is the one I most look forward to reading when I receive your magazine. Don't people have anything better to do with their lives than worry about whether Cringely uses the word "sucks?"

Herman W. Sierra
Cliffside Park, NJ

Like most of your readers, I enjoy reading Robert X. Cringely each week. He not only provides interesting information, but does so in a very humorous way. Humor is healthy and spawns creativity. To those readers who wish to see Robert stop, I say lighten up and get a life.

Scott Rolfson
Milwaukee, WI

These letters represent only a small portion of the mail we have received in support of Robert X. Cringely. — Editors

Product of the Year

I was surprised to see Microsoft DOS 5.0 listed as the Software Product of the Year (February 10, page 14). From the reviews I read and my personal experience, it seemed to be a yawn. I turned to page 76 in the same issue and there was an advertisement from Quarterdeck claiming to whip DOS 5.0 into shape with QEMM. Why does the Product of the Year need QEMM to whip it into shape? I am disgusted that I have to worry about how my programs access memory with DOS 5.0. When Microsoft or anyone releases an operating system that will allow me to access all the memory in the system without worrying about 640K, lower memory, extended memory, expanded memory, high memory, or all the other arcane terms I have to contend with, then you will have the Product of the Year.

Microsoft fixed the 32-megabyte drive partition limitation in DOS 4.0. Why can't they fix the 640K limitation in RAM?

Michael Klahr
President
Bayshore Computer Systems Inc.
Surfside, FL

I found it funny to read in the February 10 issue that WordPerfect 5.1 for Windows was voted "Best Word Processing" software in your Products of the Year section, while later on in the review of Windows word processors both Microsoft Word for Windows 2.0 and Ami Pro 2.0 scored higher than WordPerfect.

What does this mean? Should we reject your Products of the Year section as haphazard and random, or should we reject your review of word processors (and all other reviews for that matter)? Somebody blew it!

By the way, after extensive personal reviews of all three products, I agree with your review. Word 2.0 is hands-down winner, with Ami Pro a close second. Unfortunately, WordPerfect 5.1 for Windows missed the boat this time out.

Paul J. Bryant
Simple Computer Solutions
Concord, CA

Clarification

The article "Borland to ship DOS Turbo update, meets ANSI specs," February 24, page 12, incorrectly stated that Turbo C++ 3.0 will support exception handling. It will not.

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CALENDAR

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31-April 2: Cambridge, MA: Patricia Seybold's 1992 Technology Forum. Contact: (800) 826-2424, (617) 742-5200.

APRIL

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MAY

3-6, New Orleans: The fourth annual Assist Conference: Assist '92: Windows of opportunity. For more information, contact: (312) 644-6610.

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Multimedia authoring tools

Five Windows, Mac programs turn the multimedia promise into effective communication

One of the most exciting things to happen to personal computers in years is the addition of new media that supplement the PC's role as an information delivery device.

Macintoshes have been "multimedia ready" for some time, but the corporate community has taken a wait and see attitude. A few applications helped push the movement along — MacroMind Director has been instrumental in providing a venue for multimedia expression. But overall the multimedia market has remained stagnant. Multimedia finally began to take off last year when Apple announced QuickTime for the Mac platform, Microsoft Multimedia extensions, and the Multimedia Personal Computer (MPC) standard. Developers on both platforms rushed to deliver products and display them at Comdex last fall and Macworld in January.

Corporations have been wary of the multimedia movement, and the cost and overwhelming array of technical knowledge required to set up a system have kept multimedia out of the boardroom. However, with recent hardware price reductions and improvements to hardware components, such as CD ROM players and high-quality sound cards, the installed base of multimedia-capable machines has started to grow steadily.

But to use the hardware for more than listening to music CDs, glancing at online databases, or toying with entertainment programs, there needs to be a relatively easy way to develop useful applications with sound, video, and scrolling text. Enter multimedia authoring tools — the magnet that can pull all of these diverse components together. Originally, these tools were exclusively extensions of existing programming languages or based on scripting languages that required some type of programming sophistication. Now, authoring tools have diversified, providing high-, mid-, and low-end tools that can be easily learned and mastered.

The first two disciplines that readily embraced multimedia are education/training and marketing/sales. Both of these areas rely on grabbing and holding people's attention; flashy visuals and sound make their messages very persuasive. Thus, most of the applications and development tools have been tailored for these environments.



STEVE NOWAK/ STUDIO SEVEN FOR DIGITAL VISION/GETTY

CRAWL FIRST, WALK LATER. Multimedia authoring software is a broad category that encompasses all types of applications. In general these programs incorporate one or all of the following data types: text, sound, animation, graphics, MIDI, and/or CD audio and video. To incorporate this data into some type of coherent presentation, the application must rely on specialized hardware (and a lot of technical know-how) to deliver the data. Currently, it is almost impossible to coordinate all of the different hardware and software components into one integrated system on PC compatibles. The Mac is a step ahead, with built-in sound, but high-quality video and output still have a long way to go on both platforms.

A step in the right direction is the formation of the MPC standard. This standard, spearheaded by Microsoft and a handful of hardware manufacturers involved in the Multimedia Publishers Group, calls for a common multimedia hardware/software configuration that contains digital audio capabilities, a CD ROM drive, and Microsoft's Multimedia Extensions for Windows 3.0. Vendors who comply with the standard display an MPC logo that identifies the product as multimedia savvy. IBM has announced its own multimedia machine that includes extensions for OS/2 2.0. Apple plans to introduce its own multimedia machine later this year. All of these "standards" are still confusing; but in the future, all personal computers will have these components built-in and multimedia applications may be as common as word processors.

In this comparison we have chosen a wide range of tools, from the very high end of the category to the most basic. Two of the authoring packages in this compar-

WRITTEN AND TESTED BY **JIM CANNING**
REVIEW BOARD

EDITED BY **ANNE KALICZAK**
ASSOCIATE REVIEWS EDITOR

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Sidebar on MPCs 96

ison are based on existing products and, therefore, show signs of having had multimedia support added after the fact. This is not necessarily a major drawback, but it reveals the state of the marketplace. Asymetrix offers its Multimedia Resource Kit as an add-on to ToolBook and Microsoft's Multimedia Viewer is an extension of the Windows SDK help compiler. On the high end we examine Authorware Professional for Windows, AimTech's IconAuthor, and MacroMind Director 3.0 for the Macintosh.

A PROFUSION OF PARADIGMS. Each of these authoring tools offers a distinctly different programming model. Some tools will be easier for people with traditional programming backgrounds to master. (ToolBook, for instance, is largely a procedural scripting language despite its object-oriented structure.) Authorware and IconAuthor are geared toward users who are visually oriented. Director will appeal to people who like film or animation models, although a scripting system similar to HyperCard's is used as well. Multimedia Viewer will appeal to those most comfortable with books or magazines as a delivery medium.

PICKING A WINNER. There is such a diversity of scope in multimedia development projects that ranking one of these tools over another is next to impossible. A better method is to consider which tool would work best for the project you have in mind. All these products are generally well suited for what they are capable of doing, but a clear "winner" will stand out only when you know exactly what you want to achieve. For example, if your goal is to develop training courses that evaluate a student's mastery of the material, consider either Authorware or IconAuthor, because they are geared toward that format. But if you have a 2,000-page manual you want to convert to an on-line hypertext version with full-text search, go straight to Multimedia Viewer. ToolBook is more versatile — you can use it in either or both manners, although it excels in neither.

THE BOTTOM LINE. Multimedia development and application distribution often involve costs that go well beyond the retail price of the authoring tool. The licensing/distribution costs for a finished multimedia project, whether for internal use or for retail sale, are another factor to take into account early in the tool selection process. There is a wide range of run-time licensing fees, from free to quite expensive. Microsoft's Multimedia Viewer, for example, produces a "compiled" executable with unlimited free distribution rights, whereas the high-end tools have a variety of licensing options, none of which is cheap.

Another cost consideration besides the standard Multimedia platform (i.e. computer with MPC upgrade kit, or prepackaged MPC) will be the accessory tools needed during development: Image editing and paint software, sound recording equipment, MIDI interface, video source, and animation software are often best implemented with products other than the master authoring tool. In fact, this seems to be the trend in multimedia: small, specialized tools that perform their limited duty extremely well and integrate with other tools via standard interfaces.

Jim Canning is an independent multimedia title developer with Stratos Systems, In Sunnyvale, California.

Testing Windows, Macintosh multimedia authoring tools



We have never before covered multimedia authoring tools in a product comparison, so we have developed a new set of scoring and testing criteria for this review. These authoring packages run either under Microsoft Windows 3.0 with Multimedia Extensions, soon to be integrated into Windows 3.1, or on the Macintosh with QuickTime extensions.

Our testing platform for the Windows products is a Dell 33-MHz 486 with 8 megabytes of RAM, a 19-inch monitor, an Opta MonaLisa graphics adapter, and the Multisound audio/MIDI board from Turtle Beach. MacroMind Director was tested on a Macintosh IIcx with 5 megabytes of RAM running System 7.0.

PERFORMANCE:

Programming environment: This is the portion of the authoring tool in which developers spend most of their time. We score primarily on the facilities offered to integrate media elements into program flow. For a satisfactory score we require basic flow-control operations such as looping and conditional branching, along with calculation and data manipulation capabilities (utilizing the equivalent of variables, Boolean logic, and simple mathematic calculations). Not all multimedia titles require these capabilities.

We award bonus points for debugging facilities, string manipulation tools, timing controls, dynamic file I/O, and the capability to compile the finished application.

We also consider the smoothness and integration of the environment and how well it meshes with the operating system conventions.

Hyperlinking: This defines the capability to program "jump triggers" for a static object (for example a word, phrase, image, icon, screen region, etc.) to initiate an action or a jump to an associated data element. Jump points are from static objects to either static or time-based data types (e.g., sound, music, animation, video, CD-Audio).

Each of the authoring tools for the PC reviewed here supports the Windows Multimedia Extensions via the Media Control Interface (MCI), the primary method for controlling data and video elements in Windows products.

For a satisfactory score a package must have the capability to set jumps from one static element to another and must let the user assign a bookmarker (or place marker) to allow a return to the start point. (Bookmark capabilities needn't be automatic but must be programmable.)

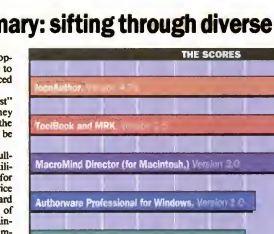
We award higher scores to products that have jump triggers to time-based data elements from static elements and those that have hyperlinking capabilities, or some form of automation or assistance in managing hyperrelationships.

Media/data import: Since multimedia applications are often required to deal with traditional as well as new media, we require the capability to use static and time-based media. For a satisfactory score, we require the capability to import bit-mapped files in two or more file formats common to the tool's native environment. These may include BMP, PCX, TIF, GIF, TGA, or DIB for Windows and TIFF or MacPaint for Macintosh. We also require ASCII text import from disk or clipboard and playback of sampled sound and CD-Audio.

Bonus capabilities include database

See HOW WE TEST, page 80

Executive summary: sifting through diverse products



Multimedia software development is becoming accessible to nonprogrammers, as evidenced by these products.

It is difficult to say which is "best" among these packages, because they vary greatly. You must consider the nature of the title(s) you will be developing, and the type of user.

AimTech's IconAuthor is a full-feature development product with utilities for developing source materials for multimedia titles. Due to its high price ($4,995), IconAuthor is geared toward large institutions with a variety of applications to build, especially training systems. Its flow-chart programming paradigm allows it to be used by nonprogrammers, although some training will be required. Its excellent tutorials and included vendor training should make it easy to adopt.

Asymetrix's ToolBook and Multimedia Resource Kit is an extension of the base product, ToolBook. This product is geared toward people who know a little about programming, but who can't or won't spend time with complicated languages like C. The scripting language used in ToolBook is fairly English-like; the programming environment is the best and is loosely modeled on a book paradigm. This is a flexible, general purpose development system and is not limited to multimedia product development. Its major strength is its rich scripting language, although it will take some time to master. Priced at $695, it offers strong application linking, import capabilities, and unlimited run-time licenses.

MacroMind Director is the only Macintosh product in our comparison and operates without peer on that platform. The feature-rich $995 product enables users to create high-quality productions without undue effort or programming knowledge. Its animation tools are particularly strong, and it has no significant weaknesses. Although Director isn't yet a Windows product, Windows Player is available to play Director movies.

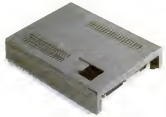
Following IconAuthor closely in format is **Authorware Professional for Windows.** Authorware Professional, available in both Mac and Windows versions, utilizes the same icon-oriented flow-charting model that IconAuthor does, although in a somewhat simpler and more elegant fashion. Authorware Professional is optimized for monitoring user interaction, which makes it a good choice for training systems and educational organizations. Animation capabilities are very strong in this product. Authorware's ease of use is also tops. The biggest drawbacks are the list price ($8,000), run-time licensing fees, and technical support fees ($1,200 per year). Although this is a very capable and powerful tool, its high costs limit Authorware's appeal.

Microsoft Multimedia Viewer (a part of the Multimedia Development Kit) is designed for text-oriented reference applications. The newest and least expensive ($495) product in the group, it is best suited for building on-line documentation systems or educational material that involves lengthy descriptions. Multimedia Viewer has no real programming environment, yet it requires no programming experience and is, therefore, accessible to a large variety of users. However, its lack of tools for designing interactive multimedia applications and animation makes it a poor choice for systems that must evaluate user response, such as training systems or kiosks, nor is the product supported directly by Microsoft. Multimedia Viewer also offers a terrific means of developing on-line documentation for mainframe systems and procedures, assuming you are using a Windows-based terminal emulator.

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PRINTERS. PAGES AHEAD.

HOW WE TEST / Multimedia authoring

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file import (either dBase or ASCII delimited), vector (object) image format import of one or more common formats (DRW, DXF, WMF, CGM, EPS for Windows; PICT, PICT2, EPS for Mac), and playback control of MIDI and video sources. We also consider support for system-level movie clips (specifically, AVI for Windows and QuickTime movies for Mac).

Animation: We require that the program have the capability to move bit maps (or objects or text) by using some sort of program control. Though we require an authoring tool to be able to create its own animations, the most essential capability is to play back externally created animation. The authoring tool should be able to control the visibility, speed, and direction of objects under program control.

Bonus features include graphic path editing, transition effects such as fades and wipes, the ability to rotate objects, and transparency and layering effects.

Application linking: When a multimedia application needs a function best handled by another program, the development tool should be able to link to that application. For example, a program should launch a text editor to allow the user to take notes, provide a link between the application and a charting program that plots information entered by the user, or access the primary application (another application that needs to launch



and control the multimedia program, perhaps as a form of on-line help).

For a satisfactory score, we require the capability to launch a second application and specify a data file for it to load. We award bonuses for the capability to launch another application, run it, and then return to the multimedia program. We also award bonuses for allowing hotlinks via program-to-program communications such as Dynamic Data Exchange (DDE) on Windows and Inter-Application Communication (IAC) on the Mac. Another useful capability is support for object embedding, such as OLE, where the object's source environment is responsible for playback.

DOCUMENTATION:

Documentation scores reflect the quantity and quality of both written and on-line information.

At a minimum, the documentation must describe the programming facilities and media import procedures and provide an index to function descriptions. We award bonus points if the documentation is enhanced through the use of tutorials, model applications, or samples or has an unusually complete index to functions.

EASE OF LEARNING:

In this category we look at how easy it is to learn the basic development environment and functions. We consider the ease of navigating through the development environment and the quality and clarity of the user interface. How well the documentation and tutorials support learning is another factor.

EASE OF USE:

Ease of use is a function of the program's design. This category examines how easy the program is to use after the user has mastered the basic skills. We award bonuses when a program goes beyond the competition in saving users time and sparing them frustration. We consider how quickly you can make modifications, the presence and effectiveness of keyboard accelerators, and the logical placement of menus and tools.

SUPPORT:

Support policies refers to the cost, availability, and methods of technical support. We award a satisfactory score if the vendor provides unlimited, free (but not toll-free) technical support. We award bonuses for toll-free lines, usability warranties, BBS services, and money-back guarantees. We subtract points when the vendor provides no technical support, limits the free period to 90 days or less, or offers no telephone support.

Technical support scores reflect the quality of service we receive in anonymous calls to the vendor and the availability of knowledgeable technicians.

VALUE:

Value is a combination of performance and features, taking into account the cost of the software and the relative value of the competition. Factored into value is the cost of completed application distribution fees, if any.

REPORT CARD

INFO WORLD

Multimedia Authoring Tools

	(Weighting)	Authorware Professional for Windows Version 1.0	IconAuthor Version 4.01	MacroMind Director (for Macintosh) Version 3.0	Microsoft Multimedia Viewer (MDK) Version 1.0	ToolBook and MRK Version 1.5
Price		$8,000	$4,995	$995	$495	$695
Performance						
Programming environment	(125)	Very Good	Very Good	Very Good	Satisfactory	Excellent
Hyperlinking	(100)	Good	Good	Very Good	Excellent	Very Good
Media/data import	(100)	Good	Excellent	Very Good	Very Good	Excellent
Animation	(50)	Very Good	Good	Very Good	Poor	Good
Application linking	(50)	Good	Very Good	Good	Very Good	Very Good
Documentation	(125)	Very Good	Very Good	Very Good	Very Good	Very Good
Ease of learning	(100)	Very Good	Excellent	Good	Satisfactory	Very Good
Ease of use	(100)	Excellent	Very Good	Very Good	Satisfactory	Good
Support						
Support policies	(50)	Poor	Very Good	Good	Poor	Poor
Technical support	(75)	Satisfactory	Vary Good	Very Good	Satisfactory	Satisfactory
Value	(125)	Poor	Good	Very Good	Good	Very Good
Final scores		**6.3**	**7.6**	**7.2**	**6.0**	**7.4**

GUIDE TO REPORT CARD SCORES

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Products receive ratings ranging from unacceptable to excellent in various categories. Scores are derived by multiplying the weighting (in parentheses) of each criterion by its rating, where:

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Good = 0.625 — Meets essential criteria and includes some special features.
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Poor = 0.25 — Falls short in essential areas.
Unacceptable or N/A = 0.0 — Fails to meet minimum standards or lacks this feature.

Scores are summed, divided by 100, and rounded down to one decimal place to yield the final score out of a maximum possible score of 10 (plus bonus). Products rated within 0.2 points of one another differ little.

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INFO WORLD











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Authorware Professional
Version 1.0

Authorware Inc. has been in business for years and has built some wonderful interactive multimedia titles. Its experience in custom development shines through in Authorware Professional for Windows, a port from the original Macintosh version. This product, like IconAuthor from AimTech, is geared toward interactive education and training applications.

Support for system multimedia services (Windows with Multimedia Extensions) was added near the release date for this product. Although multimedia extensions support is not fully integrated into the authoring environment, Authorware Professional still comes across as a serious multimedia development tool. Much of the user interface is reminiscent of the Mac (small black and white icons, for instance), and the dialog box controls are nonstandard, but these are not serious problems.

Authorware Star, which Authorware calls a "personal authoring software for mainstream Windows 3.0 users," has been announced. It will be bundled with Acer multimedia PCs here (shipping in May) and in Japan on NEC machines.

PROGRAMMING ENVIRONMENT

Development of a multimedia presentation in Authorware Professional involves placing design icons into a flowchart, which represents the program's order of occurrence, including looping and decision points. Program functions are represented as icons and can be grouped and then collapsed, simplifying programming and hiding unwanted detail.

One of the most convenient features of the development environment is the ease with which you can switch between scripting and running the application. To edit, all you need to do is double-click on any given object and make changes to the script. When you return to execution mode, you are taken back to the point where you left off. If there is an incomplete function in the flowchart area, one of the appropriate development tools will appear when you execute the application. There also are start and stop points — equivalent to breakpoints in programming.

Authorware Professional incorporates a Preload function that improves overall response times of an application. By selecting in advance which images or sounds will to be used or reused during program execution, the author can buffer an image of these resources so that they need only be drawn from memory instead of disk. This can be especially important when the title is to be distributed on slow CD ROM.

Score: Very Good.

See AUTHORWARE, page 84

IconAuthor
Version 4.01

IconAuthor includes all the tools necessary to build full-featured multimedia titles. Like Authorware Professional, IconAuthor supports multimedia devices beyond the basic set required for Microsoft Windows 3.0 with Multimedia Extensions. IconAuthor runs on PC compatibles under Windows, DEC workstations (both VMS and MotifUltrix), and HP workstations under Motif.

IconAuthor is designed for developers of interactive courseware and kiosk systems. Even the examples use functions that are characteristic of testing material, such as multiple choice answers, and the tutorials and explanations are clearly written for nonprogrammers.

Like Authorware, IconAuthor utilizes a graphical flowcharting model for development. There are 50 well-designed icons displayed along the left margin representing all the functions available. These icons can be selected and then placed in the work area during development to represent the flow of the application over time.

Each of the various media preparation tools included in IconAuthor is a separate Windows applications. There is a graphics editor, an animation editor, a bit map manipulation tool, a Smart Text editor (which allows the creation of text fields including the display of variables), and a Video Editor that lets you screen video sources for frame segments.

The IconAuthor development environment is a highly guided system that lets you place icons in an application flow diagram. You select icons from a scrolling palette and place them into the work area.

Groups of icons can be selectively collapsed into a single encapsulated icon as a navigational aid for the developer. In addition, the view of the flow diagram can be expanded or contracted to enable a broad overview or to zoom into detail. There are icons that represent various functions as well as icons for looping and conditional branching.

IconAuthor supports user, system, and path variables. User variables are traditional storage buffers. System and path variables are associated with functions managed by IconAuthor and the installation process.

One of the best aspects of IconAuthor's development system is its ability to dynamically load external content files at run time. Portions of an application can be maintained separately from a given title and loaded as needed. You can keep libraries of reusable media on hand, and in a LAN environment, this can help in group development projects and in the distribution and size of titles. **Score: Very Good.**

HYPERLINKING

Authorware Professional allows you to use hotspots, buttons, and user events (clicks, etc.) to trigger jumps. By using a calculation icon and including a library to translate it, you can make the MCI functions for waveform, MIDI, animation, and video services. In addition, you can create the equivalent of a bookmark function.

Hypertext capabilities, where floating words or phrases in text fields are tagged with "jump to" information, are not supported. The emphasis in this product is on interactive multimedia title development, rather than reference-type titles, where hypertext is necessary. **Score: Good.**

User input or timeouts can trigger just about any action, function, or movement in IconAuthor. In addition you can trigger any MCI device via the MCI icon; however, there is not much documentation explaining syntax preparation, but there is enough for most uses (an updated manual that outlines MCI functionality should be shipping this month). The wide variety of drivers for multimedia outside the range of MCI devices makes IconAuthor quite flexible in bringing in video or playing audio.

Hypertext capabilities are not a strong point in IconAuthor. Jumps can be made from text regions, but not from free-floating words within a text field. You can construct a bookmark or place marker function, although there is no default bookmark concept.

Score: Good.

See ICONAUTHOR, page 84

MacroMind Director
Version 3.0

MacroMind Director 3.0 was one of the first and most popular multimedia tools on the Macintosh. With Director you can create interactive multimedia presentations, desktop video productions, and other creative visualizations.

MacroMind Director 3.0 uses five different multimedia data types, including text, graphics, animation, video, and sound, to create individual scenes. Then, using the Overview module, you assemble the media elements and add controls for timing and transitions. Director also includes the animation module Studio, which contains bit map paint tools and basic object-oriented drawing tools that enable you to create and modify cast members. These can then be moved about in many ways to create animated effects.

At the heart of the Studio module is the Score window, which is used to control the action of each cast member in a movie. The Score window has rows (or channels) for sound, effects, and individual cast members and columns that represent the frames of your movie.

In order to control cast members and objects, Director uses a script-based language called Lingo, which includes a full-screen script editor. After you have written a script, it can be assigned to a frame in the score, to a cast member, or to the entire movie. Director 3.0 also includes XObject files, pieces of compiled code that Lingo can access. Some of the XObject files allow you to control devices such as CD ROM and laser disc players, LANC devices, special video cards, and video recorders.

You use Lingo to create loops for individual movies and scripts that can be controlled by a button, typed text, or another defined interactive sequence. Loops have start and stop controls. To determine where a script or movie will branch, there are frame markers and labels. You can also use elaborate If statements to control when looping or branching occurs.

Director's If-Then-Else syntax can accommodate nested If statements, and it allows for elaborate scripts to be run when the statements are evaluated. Other statements such as Repeat While and When. . .Then give you control over what happens under certain conditions.

Director can accommodate a wide range of variable types and offers abundant math functions and operators to process your input. Numeric and string variables are available and values can be treated in a global or local fashion. Operations include absolute value, integer, square root, modulo, and random-number generation. Variables and constants can be concatenated; a range of comparison operators are available. **Score: Very Good.**

Lingo is similar to Hypercard's HyperTalk scripting language. Version 3.0 of Lingo has more than 60 new commands, including support for floating-point math, date/time, startMovie and stopMovie handlers, sound, mouse, and object functions. In addition, cast members can now have external device controls attached with scripts. The Script window is used for editing scripts, and a text search-and-replace enables you to add comments to command lines or place them on separate lines. Each movie can have a single script attached to the entire document. These movie scripts let you define what happens when a movie starts, stops, or pauses. You can also define procedures (known as handlers) in a movie script for use in other scripts. Scripts placed in the Script Channel in the Score window are associated with a single frame in the movie and executed when that frame is played. Scripts attached directly to cast members create interactive cast members that respond to input. Cast scripts can also contain factories, which are complex scripts that can create multiple copies of a cast member.

Score: Very Good.

See MACROMIND DIRECTOR, page 84

Microsoft Multimedia Viewer
Version 1.0

The Microsoft Multimedia Development Kit (MDK) is for developers who are mainly interested in writing C-based Windows applications. But the package also has an interesting multimedia title authoring environment, Multimedia Viewer. As the "skeleton" of a Multimedia Viewer title is based on a Rich Text File (RTF), you must have Microsoft Word for Windows to prepare data. This is useful if your project involves a lot of text, especially if it is already in electronic format.

Multimedia Viewer titles are primarily hyperlinked reference applications — they do not ask the user for input, and cannot be used for data entry or skill validation. In this context, Multimedia Viewer cannot compete with the other tools in this comparison. However, Multimedia Viewer does a superior job of presenting reference materials (such as on-line documentation and educational materials) in a hyperlinked multimedia format and offers an automatic full-text search index — which none of the others includes. Multimedia Viewer titles are compiled and require no distribution fees.

Multimedia Viewer titles owe their lineage to the Windows SDK help engine and generally resemble it closely. Microsoft has indicated that in the future, Viewer will receive both an enhanced development environment and an improvement in resulting titles. But for now, the development environment is fairly disjointed, with each step of the process requiring a different, non-integrated program, including DOS-based compilation.

PROGRAMMING ENVIRONMENT

Multimedia Viewer is unique in that Word for Windows is the primary tool used for development of a Viewer title. Using Word, you prepare the main body of text by breaking it into topic files, which serve as chapters. You enter index item lists as footnotes in the RTF source file. The software can construct a "guided" series of topics into a title to assist users who do not wish to explore manually.

Graphics, sounds, and animation are all encoded in a similar fashion. A Viewer command, such as Play Audio or Display Bit Map, is linked to a word, phrase, or bit map. In the case of a word or phrase, you format the string as double underlined, and then type a hidden command string that specifies the command type and data file to use. A hot-spot editor lets the author specify regions of a bit map that cause jumps or events when clicked by the user.

When all the RTF and data files are prepared, you create an ASCII Project File that lists resources and tells the build program how to construct the title. Conventional programming flow controls (looping, branching, etc.), as well as calculation and data manipulation capabilities, do appear in Viewer, but in very limited form. There is also a compiler. Although programming control in Viewer is sufficient for its purpose, the environment cannot really compare with the other four products'. **Score: Satisfactory.**

HYPERLINKING

The primary strength of Multimedia Viewer lies in its hyperlinking capabilities. Viewer titles are based on the concept of jumps between information elements and offer several means of accomplishing these jumps.

You can create direct links between points in a title by tagging an element in the text file or by defining hotspots over a bit-mapped image. Viewer command tags also trigger time-based media, such as sounds, MIDI sequences, or animation.

Bookmarks are built into the Multimedia Viewer "engine"; thus, the reader simply pulls down the bookmark menu to mark a spot in the title, then jumps off to some new area. To return to the marked spot, the reader simply pulls down the Bookmark menu again, and the starting point is now listed as one of the menu options — no coding is necessary.

Perhaps best of all, at least for titles that comprise large amounts of text, is Multimedia Viewer's automated full-text indexing support. This service is provided simply by selecting it, with an associated Search button, in the Project File. **Score: Excellent.**

See MULTIMEDIA VIEWER, page 85

ToolBook and MRK
Version 1.5

Asymetrix's ToolBook is a well-known authoring tool for Windows. With the addition of a second Asymetrix product, the Multimedia Resource Kit (MRK), ToolBook becomes Multimedia ToolBook, and can be used to build full-featured multimedia applications. It is capable of using nonstandard drivers for multimedia devices but is primarily intended to support Windows with Multimedia Extensions. Owners of ToolBook 1.5 can purchase the MRK separately.

ToolBook is an object-oriented programming environment that remains accessible to the novice. It is not specifically designed for multimedia title development but makes it relatively easy to build one if you are comfortable with using a scripting language and its inevitable syntax considerations. While ToolBook may not be as easy to learn as the high-end multimedia development tools, it is one-tenth their price, and it will reward the diligent developer with a robust environment capable of almost any project.

PROGRAMMING ENVIRONMENT

Nearly all application functions are established by writing scripts in ToolBook's programming language, OpenScript, which is similar to HyperCard's scripting language; it will be easy to use and master for anyone with even light programming experience. ToolBook provides fine control over almost all aspects of the system.

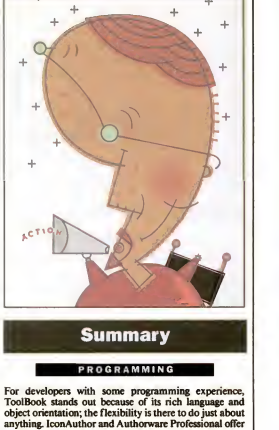
ToolBook supports all standard programming constructs, such as looping, branching, and case statements. Local and global variables, and matrices are available. Math functions are extensive, as are string-manipulation tools. Timing controls are available via either standard system clock functions or through Windows. There is a superior integrated debugger, including multiple breakpoints and a variable watcher window.

The MRK functions are accessible after linking an application to a "system book," a library of functions that are linked to the MCI layer. The MRK extends ToolBook's scripting language to include calls to the MCI. An extensive sample application, consisting of nearly complete sets of "widgets," allows you to cut and paste sample code. In addition, the MRK gives you access to the full set of MCI string commands and return messages. A custom font is also included that allows the developer to assign intuitive control symbols to buttons for multimedia device controls. You can distribute completed applications with a run time of ToolBook, but no compiler is available. **Score: Excellent.**

HYPERLINKING

ToolBook, in conjunction with the MRK, offers the ability to trigger almost any event from any screen object or region. Words in text fields can be assigned hot-word status, which means that a particular tag stays with the word even if you scroll or edit the text. This hypertext capability is shared only by Microsoft's Multimedia Viewer among the products we reviewed. Hot words can be invisible or marked as boldface by the user through a menu selection. The user can then trigger any ToolBook or MCI event via the hot word. Any ToolBook object can send and receive messages or commands to any other object. You can define events using OpenScript. While not automated, it is relatively simple to create a "bookmark" function that enables you to navigate through the application. Hot-word assignment is not automated; ToolBook offers no automation of the process of hot-word assignment within text fields. You must manually tag each instance of a word. **Score: Very Good.**

See TOOLBOOK, page 85



Summary

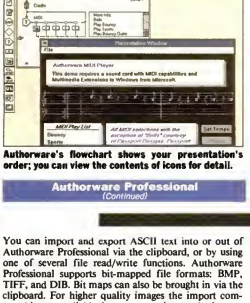
PROGRAMMING

For developers with some programming experience, ToolBook stands out because of its rich language and object orientation; the flexibility is there to do just about anything. IconAuthor and Authorware Professional offer relatively simple but powerful development tools that will suit nonprogrammers well. Director offers a very visual method of programming that is easy to follow. Multimedia Viewer, though not a true development system, offers the tools necessary to build its specialty: large hypertext/hypermedia titles.

HYPERLINKING

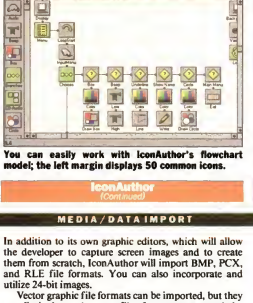
Multimedia Viewer is the top performer in this category. With its full-text search engine, hot-spot editor, and navigational aids, it can handle just about anything. ToolBook offers good hypertext services via its "hot-word" capability. Director operates similarly to HyperTalk and offers numerous useful commands.

See SUMMARY, page 85



Authorware's flowchart shows your presentation's order; you can view the contents of icons for detail.

Authorware Professional (Continued)



You can easily work with IconAuthor's flowchart model; the left margin displays 50 common icons.

IconAuthor (Continued)



Director's script language is Lingo, which controls cast members and objects in your presentations.

MacroMind Director (Continued)

MEDIA / DATA IMPORT

You can import and export ASCII text into or out of Authorware Professional via the clipboard, or by using one of several file read/write functions. Authorware Professional supports bit-mapped file formats: BMP, TIFF, and DIB. Bit maps can also be brought in via the clipboard. For higher quality images the import command is more reliable, because some images don't carry their palette information into the clipboard, which could result in an unexpected shift in colors. Supported vector formats are WMF, Macintosh PICT, PICT II, and EPS.

Database files cannot be imported. However, Authorware Professional has its own indexed array structure that can be used for simple database operations (it has a limit of about 2,500 entries).

Most time-based media are supported by using Media Control Interface (MCI) function calls, for example waveform, MIDI, CD-Audio, and animation. However, small waveform clips and simple monochrome animation can be introduced using their own icons in the flowline area and don't need to directly involve MCI. There are also numerous options for looping and playback duration that enable you to give these different media types more flexibility beyond simple playback. No editors are provided for these media. **Score: Good.**

In addition to its own graphic editors, which will allow the developer to capture screen images and to create them from scratch, IconAuthor will import BMP, PCX, and RLE file formats. You can also incorporate and utilize 24-bit images.

Vector graphic file formats can be imported, but they are limited to the metafile formats supported by Windows and PageMaker.

You can display and read unformatted ASCII text files using the text icon. However, you must author Smart Text files in the Smart Text editor, and import them via the clipboard. IconAuthor is capable of reading and writing dBase files as well, which extends the range of titles you can develop (for example, simulations of mainframe systems).

Waveform audio import support is handled via the Media Control Interface (MCI) icon; however, waveform recording is not supported (it is available with Multimedia Extensions.). You can play back CD-Audio using the MCI control. The Video Editor lets you select video material, which facilitates browsing of a video source for frame-reference selection. **Score: Excellent.**

Most popular video devices are well supported by Director 3.0, including laser disc players, CD ROM players, video capture cards, and VCRs that allow for computer-controlled operation. If you are not satisfied with animation and objects that Director creates, you can easily import animated sequences and models from other programs.

Director 3.0 supports a second sound channel in the Score window, enabling you to add voice-overs, music, and stereo effects. Movies created using earlier versions of Director will have the sound information placed into sound channel 1. By using Lingo commands, you can fade sounds in and out. In addition, sounds play automatically while movies are loading, making longer presentations more seamless and interesting. Sounds can be played directly from your hard disk or externally from audio CDs, video discs, or VCRs. Director 3.0 is compatible with Apple MIDI Manager 2.0 and can play AIFF sounds from disk, enabling you to play long sounds without increasing the size of the movie files.

The Overview module supports PICT, MacPaint, and Glue documents, along with animations from Director and accelerated movies created by MacroMind Accelerator. PICS files can be imported in Studio and saved as Director movies for use by Overview. Both Overview and Studio access Macintosh SND files for sound, AIFF files, and files created by SoundEdit.

The Studio module can import Director movies, PICT, MacPaint, PICS, and scrapbook files. Scrapbooks with multiple images will be imported to separate frames in a movie. Movies can be saved as scrapbooks and PICS files or as a series of PICT files. You can select imported frames from a PICS file and specify the frames you wish to export. Version 3.0 does not support TIFF or Encapsulated PostScript files. **Score: Very Good.**

PERFORMANCE: ANIMATION

Authorware Professional handles graphics and text animation well. You can automatically record object motion as the author drags the object, and you can literally interpret the resulting path (how long it took you to do the dragging) based on speed (seconds per inch). You can also use path-based animation, and paths can be point to point, fixed within a given coordinate region, and even linked to values in variables. This last item is useful in building simulations of mechanisms.

You can apply transition effects at points where objects arrive and leave the presentation space — enhancing your animations. Visual properties that determine whether the object is transparent, opaque, etc., can be assigned to both text and graphic objects enabling you to create interesting layering effects. In addition, more than one animation can occur at once.

Unfortunately, there is no editor available for the Movie format (the included clip media is in this format), unless you own both a Mac and a PC, and some additional software for the Mac. **Score: Very Good.**

IconAuthor comes with its own animation editor, called IconAnimate. This utility, also sold separately, is quite a capable program.

You select a tool and then drag it to the editing area and drop it in place. Once the icon is located, double-clicking opens the content-editing window for the particular icon. Various aspects of the function can then be typed in or selected from drop-down choice lists. Each function can then be labeled with a comment, which makes reading animation scripts much easier. Pauses and other timing elements are available, along with special effects for transitions.

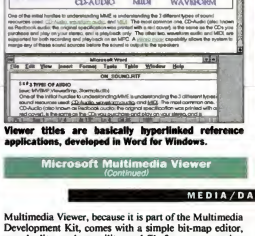
Once the animation is created, you cannot directly manipulate your animations — all of the controls are contained in the animation script editor. Some animation operations appear a bit awkward when handled through the scripting window.

It would help if IconAuthor could import third-party animations as intuitively as the other functions. As it is, the developer must use the MCI icon to activate an animation driver; then a predefined function allows the developer to get the windows handle of the IconAuthor display so that the animation playback is directed onto the main display window, rather than to a child window. **Score: Good.**

Director's basic animation techniques involve setting up the beginning and ending frames of an animation — Director will automatically create the frames in-between. "Tweening" (the capability to interpret the position and shape of intermediate cast members) features include the capability to automatically accelerate and decelerate action, and the capability to tween objects along curved paths. Director automatically transforms objects after you specify the beginning and ending shapes and rotations. Features such as 32-bit color support, anti-aliasing, and blending bit-mapped cast members improve the appearance of movies.

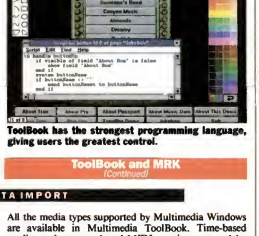
Although Director's animation tools are sophisticated, video professionals may wish to use MacroMind Three-D to animate and render three-dimensional models created by other applications. These animations can be imported by Director and used in either Studio or Overview. **Score: Very Good.**

See AUTHORWARE, page 88 See ICONAUTHOR, page 88 See MACROMIND DIRECTOR, page 88



Viewer titles are basically hyperlinked reference applications, developed in Word for Windows.

Microsoft Multimedia Viewer
(Continued)



ToolBook has the strongest programming language, giving users the greatest control.

ToolBook and MRK
(Continued)



Viewer's full-text search capabilities are unparalleled and suit its strength: presenting reference materials.

Summary
(Continued)

MEDIA/DATA IMPORT

Multimedia Viewer, because it is part of the Multimedia Development Kit, comes with a simple bit-map editor, sound editor, palette utility, and file-format conversion utility. These are all stand-alone Windows applications.

The Converter utility is capable of handling a wide variety of audio, bit-map, palette, and MIDI file formats. Macintosh developers will be happy to see that Apple's AIFF sound format is convertible to Windows' now-native WAV format. There are a total of 16 bit-map file formats supported, seven of which are both read and write supported. Only 16-color bit maps may be embedded directly into a Viewer title, but external 256-color bit-map files can be displayed in pop-up windows.

Text import is handled via Word for Windows' wide variety of import filters. An interesting note is that titles can be annotated by the user — the particular topic heading then shows a paper clip icon, which displays the note when clicked. Although annotation is a great concept, it is very limited in implementation, with only one note per topic. There also is no indication as to the location of your annotation file.

Playing CD-Audio and/or video from an external device is possible from Multimedia Viewer, using MCI command strings associated with a hotspot.

Score: Very Good.

All the media types supported by Multimedia Windows are available in Multimedia ToolBook. Time-based media, such as sound and MIDI, are incorporated by using MCI command strings, and you can trigger events after playback has ended. Bit maps stored outside the application file can be displayed under program control, or embedded in the file itself.

ToolBook includes additional device control capabilities beyond those included in Windows with Multimedia Extensions. Support for video overlay devices, video discs, and VCRs is available. ToolBook also allows the creation of custom-control functions using Dynamic Link Libraries (DLL).

ToolBook supports a number of text/data import and export capabilities. You can import or export text as unformatted, fixed-field, or delimited-field ASCII files. ToolBook will automatically create a series of record fields during importing of fixed/delimited files. In the case of delimited-field files, the delimiter is adjustable.

ToolBook includes a DLL that allows you to read and write dBase files, and it has a native record field object that lends itself well to simple database work. Third-party tools are available for access to SQL Server.

ToolBook has a native vector drawing file format and can import objects from several other packages as well, including WMF, DRW, CGM, and EPS file formats. Bit maps up to 256 colors in depth can be imported, including BMP, DIB, and TIFF file formats. You can use full-screen, VGA-size images. **Score: Excellent.**

MEDIA DATA IMPORT

ToolBook and IconAuthor handle the widest range of data types. IconAuthor even reads and writes dBase files; Toolbook offers a DLL for dBase file work. Director and Viewer also offer extensive file compatibility.

ANIMATION

Multimedia Viewer offers no native facilities to create animation. Instead it calls upon Windows for animation playback. You can trigger any animation driver registered in the Windows Control Panel, although the manual covers only movies created by MacroMind Director.

Animation can be triggered from almost any object, and a display space for the animation can be built into the text region, enabling the animation to be placed appropriately on the "page." An animation display window also can be used, and authors have a choice of automatic animation playback when triggered by the user or adding a simple control panel. Control panel animation has a VCR-like control over the sequence, enabling restart, play, stop, reset, fast-forward, rewind, and pause. A courtesy message appears while an animation is loading.

Multimedia Viewer's lack of an authoring tool for controlling animation prevents a higher score.

Score: Poor.

ANIMATION

ToolBook's graphic elements, created with its basic vector drawing tools or imported bit maps, can be extensively animated. Graphic or text objects can be manipulated in various ways using OpenScript. The developer controls screen placement, stroke and fill colors, dimensions, layering, and visibility parameters.

You can direct objects to move along a predefined path of any shape, or along x and y axes. You also can modify speed by using scripted controls. Although scripting is the main method for animation, the animation process can be semiautomated by using a recorder function that generates scripts and then pastes them into the OpenScript editor.

Animations created using other programs can be played back using script control (through MCI calls). Transition effects are available, although they apply only to the entire application display region, and not to individual objects. **Score: Good.**

ANIMATION

Director's tweening command allows you to set start and endpoints for movement, and the program does the rest. Sophisticated tools round out its strengths. Authorware has a fine motion recorder and transition effects. Viewer cannot create animation; you'll have to develop elsewhere and import the work.

See MULTIMEDIA VIEWER, page 89 See TOOLBOOK, page 89 See SUMMARY, page 89



The award winning T2200SX

If you need any more power than thi

If your desire for power is on the scale of say, Louis XIV, consider the Toshiba T2200SX. Weighing a mere 5.5 pounds and taking up just half a briefcase, it possesses an awesome 20 MHz 386SX microprocessor and a 40, 60 or 80 MB hard drive with 2MB RAM expandable to 10 MB. And it's powerful enough to have grabbed both a PC/Computing MVP award and a PC Magazine Technical Excellence Award.

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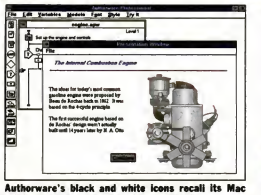


The new T3300SL

maybe you should get into politics.

If your need for power is on the scale of say, Napoleon, consider the new T3300SL. It offers a 25MHz 386SL microprocessor plus 64 KB cache for blazing speed and longer battery life. Not to mention an 80 or 120MB drive and a PCMCIA-compatible slot. And like its cousin the T2200SX, it offers a Nickel Hydride battery and a carbon-fiber reinforced case. So call 1-800-457-7777. Or if you want even more power, don't forget it's an election year.

In Touch with Tomorrow
TOSHIBA



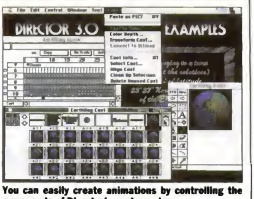
Authorware's black and white icons recall its Mac origins; they were designed for easy viewing.

Authorware Professional
(Continued)



IconAuthor is ideal for developing interactive courseware; its examples even use such functions.

IconAuthor
(Continued)



You can easily create animations by controlling the movements of Director's cast members.

MacroMind Director
(Continued)

APPLICATION LINKING

Authorware Professional can jump from one file to another and pass the contents of variables while both applications are running. However, the second jump must include a return function that explicitly calls the first. For example, if you jump to Excel to exchange data and then want to return to Authorware, you have to give control to Excel. This means that if you want to reuse modules for new applications, they must first be altered to call your new application.

Other Windows applications can be launched from Authorware Professional, including a data file specification that enables you to load files from within Authorware. Dynamic Data Exchange (DDE) is supported and well documented. Dynamic Link Libraries (DLL) can be utilized and their functions called using calculation icons (MCI calls). **Score: Good.**

IconAuthor can launch another DOS or Windows application, including its data file assignment, any time during the title. You can also control the state that IconAuthor enters when the second program launches.

Aimtech provides sample applications that utilize Dynamic Data Exchange (DDE) for interapplication communications. (One example uses Excel for data exchange.) Dynamic Link Libraries (DLLs) are also supported in IconAuthor.

You can launch a second copy of the IconAuthor title and share variables with the first. This is a useful capability when a series of development projects are planned — specific programs that perform a function needed by other programs. OLE is not supported by IconAuthor. **Score: Very Good.**

Director enables you to link other applications using the Open command. This command launches an application. In addition, an application can also open a specific document. The openDX command opens a desk accessory, such as the Calculator. Under Multifinder or System 7.0, you must have enough memory available to accommodate applications or resources that you open from Director. Therefore, since Director stays in memory, you will be returned to the location in the Director document where you left off when you quit the application. You also can use the application menu in the upper-right corner to return to Director.

If you are running Director under the System 6.0 Finder, you won't have to worry about memory, but you will be returned to the beginning of the Director document that you originally started. **Score: Good.**

DOCUMENTATION

Authorware Professional comes with four manuals that cover all aspects of the program and its functionality. There is a separate manual for tutorials and a developers' reference guide that covers the programming basics. There is also a Productivity Library, which introduces a series of templates that can be used as starting points for different types of applications or as a reference for how to accomplish certain functions. The Multimedia volume explains the various methods available for incorporating time-based media into titles.

The lesson in the tutorial manual offers a superior method for dealing with developers. The manuals are very well executed and generally complete. Examples are thorough but could be more plentiful. The index in the reference manual offers a good set of cross-references to functions, including entries that aren't part of Authorware's lexicon but that make sense to new developers. **Score: Very Good.**

The three manuals included with IconAuthor are well written. The tone is for an audience of knowledge experts rather than programmers; therefore, there is much handholding throughout the tutorials, with thorough explanations in plain English. There are clear explanations of parameters that often include detailed examples. There is also a fine selection of sample applications.

The manuals are divided into sections that are geared to different levels of expertise. The getting started manual is devoted primarily to elementary tutorials, and the users' manual covers functional areas and the supporting utilities. The reference manual gives well-detailed explanations of commands and error messages. There also is on-line help and context-sensitive help for individual icons. The indexes share a common problem of limited cross-referencing, and until you are familiar with the terminology used by a tool, it may be difficult to find the appropriate entry. **Score: Very Good.**

Director comes with four manuals: getting started, Overview, Studio, and interactivity (Lingo scripting language). The three main manuals feature tutorials, reference sections, and indexes. A disk-based Guided Tour in black and white provides a thorough introduction to Director's many features. All the manuals are complete, well written, and have many helpful illustrations. **Score: Very Good.**

EASE OF LEARNING

The manuals provide explanations and examples relating to every aspect of the product. In addition, the tutorials and prepared models of classic types of applications make learning Authorware Professional a relatively easy task, although no development system with the complexity and flexibility of Authorware Professional is ever a quick task. **Score: Very Good.**

The flowcharting metaphor gives first-time developers a common-sense view of how programs are constructed.

IconAuthor does a good job of using Windows drag and drop function. When an icon covers an appropriate place in the application development workspace, the author is aware of it; conversely, you can't put an icon where it won't work. This sort of visual cueing is very useful.

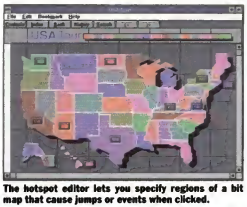
One of the nicest visual aspects of IconAuthor's programming paradigm is the use of color-coded icons in the development work space. A status bar along the bottom displays the name of the function the cursor is on. **Score: Excellent.**

Director 3.0 is a complex product but is reasonably easy to learn because of its separate step-by-step tutorials for Overview and Studio. There are no tutorials in the Lingo manual, but sample files are discussed in detail.

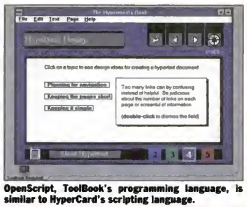
Director includes an Object Sensitive Help system that is accessed either from Help under the Apple menu or via the keyboard.

Learning the animation features of the Studio module requires an understanding of the animation process, and anyone who can master the Studio manual should be able to progress with the Lingo scripting language. To get the most out of Lingo, however, you will need programming skills. **Score: Good.**

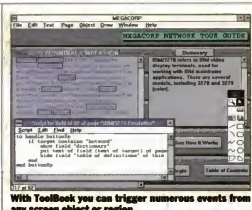
See AUTHORWARE, page 92 See ICONAUTHOR, page 92 See MACROMIND DIRECTOR, page 92



The hotspot editor lets you specify regions of a bit map that cause jumps or events when clicked.



OpenScript, ToolBook's programming language, is similar to HyperCard's scripting language.



With ToolBook you can trigger numerous events from any screen object or region.

Microsoft Multimedia Viewer
(Continued)

APPLICATION

Multimedia Viewer offers a companion utility that enables you to use the Viewer search engine from within any other Windows application. This utility, called QuicKeys, allows the user to associate a keystroke combination with a particular Viewer title (or multiple titles), such as a dictionary or encyclopedia. Once linked, users can select a word or phrase from whatever Windows application they are using and then hit the keystroke combination. QuicKeys will then activate the Viewer title and search for the requested word using either the full-text search engine or the index for that Viewer title. With the appropriate titles available, this utility will act like an extremely fast reference librarian.

Viewer's internal command structure is accessible to external programs. This means that Dynamic Link Libraries (DLLs) can utilize Viewer titles directly as a resource. Multimedia Viewer can launch another application from within a title, then return to the title. Viewer does not support Dynamic Data Exchange (DDE) or Object Linking and Embedding (OLE).
Score: Very Good.

DOCUMENTATION

A fairly comprehensive manual for Multimedia Viewer is included in the Multimedia Development Kit, and an additional volume covers the data preparation tools. The Multimedia Authoring Guide is full of helpful tips and reference information for developers new to multimedia.

Overall, the manual for Viewer is comprehensive and has useful examples. A sample application, a tour of parts of the United States, is referenced throughout the manual and provides an opportunity to see the results of particular command implementations. This linking of a working sample with text-based explanations is a superior model.

The only weakness of the Viewer manual is its somewhat incomplete index. The authors assume that you are already familiar with the terminology and do not give enough cross references using entries that have popular associations with a topic. There is no on-line help.
Score: Very Good.

EASE OF LEARNING

Although Multimedia Viewer is fairly straightforward, it is still not a simple system to master. Although using word processing skills to build an application might seem easy, it turns out to be a tedious and error-prone task. Experienced Word for Windows users will benefit from their skills, although it is not hard to learn the necessary functions from the manual.

Viewer lacks an integrated development environment; however, most of the data preparation tools are Windows-based, which somewhat ameliorates the difficulties. In addition, the documentation is very helpful once the developer becomes familiar with Viewer's nomenclature. **Score: Satisfactory.**

See MULTIMEDIA VIEWER, page 93

ToolBook and MRK
(Continued)

APPLICATION

ToolBook enables you to activate and run external programs, including specifying a particular data file for that application to load. Upon termination of the program, control returns to ToolBook at the point from which the second application was launched.

ToolBook supports Dynamic Data Exchange (DDE) as a client and as a server, and extensive scripting examples are included. ToolBook can jump to a second ToolBook "book" or application and return to the original upon completion. A second version of ToolBook can run simultaneously and be in communication with the first.

ToolBook is easily extensible using DLL for specialized functions. It can be linked to specific Windows DLLs to perform system functions such as checking available memory. ToolBook does not support Object Linking and Embedding (OLE). **Score: Very Good.**

DOCUMENTATION

ToolBook comes with a general manual and an OpenScript reference manual. The MRK includes a slim volume that details its extensions to OpenScript and provides an overview of the MCI architecture and commands. Printed examples in the manuals and sample code and applications are also included.

The documentation for ToolBook itself is very thorough. The ToolBook manual covers the basic concepts of application structure and navigation. More complex subjects, such as messaging hierarchy, are covered in easy-to-understand language. The index to the OpenScript manual offers thorough cross referencing.
Score: Very Good.

EASE OF LEARNING

ToolBook helps newcomers by highlighting the offending line of script when a syntax error is made. The ability to copy and paste scripts, objects, or entire pages from the sample applications makes it easy to get started. In addition, the Record function allows you to instantly see the OpenScript equivalents to most mouse and keyboard actions. A tool palette, similar to those of many other Windows programs, allows you to select an object type via the mouse and then paint the work space with the object until it is an appropriate size and shape. Object properties are easily modified via consistent pull-down menus or keyboard and mouse shortcuts. An extensive set of palettes, controlling fill patterns, colors, lines, and polygons can be turned on or off easily. The number and variety of OpenScript commands is a bit overwhelming at first, but the documentation makes it fairly easy to locate the appropriate functions. There are often several ways to solve a problem. **Score: Very Good.**

See TOOLBOOK, page 93

Summary
(Continued)

APPLICATION

The products are relatively similar, employing Dynamic Data Exchange or hotlinks to data in other programs. Authorware requires an extra step to call another application and then close it.

DOCUMENTATION

All of these products offer decent documentation. IconAuthor's lengthy tutorials are the most complete and through of the bunch, however. Each product offers useful templates or sample applications that support the written documentation, and Authorware leads the pack with a variety of prebuilt shells that can be customized.

EASE OF LEARNING

Each of these packages lets you build a quick application in a couple of hours. IconAuthor and Authorware both follow through with well-scripted tutorials, and IconAuthor's is a real stand-out. ToolBook will be readily accessible to anyone with programming experience; though it is not as visually intuitive as others, it is still easy to learn the basics, due in part to its object-oriented design.

See SUMMARY, page 93

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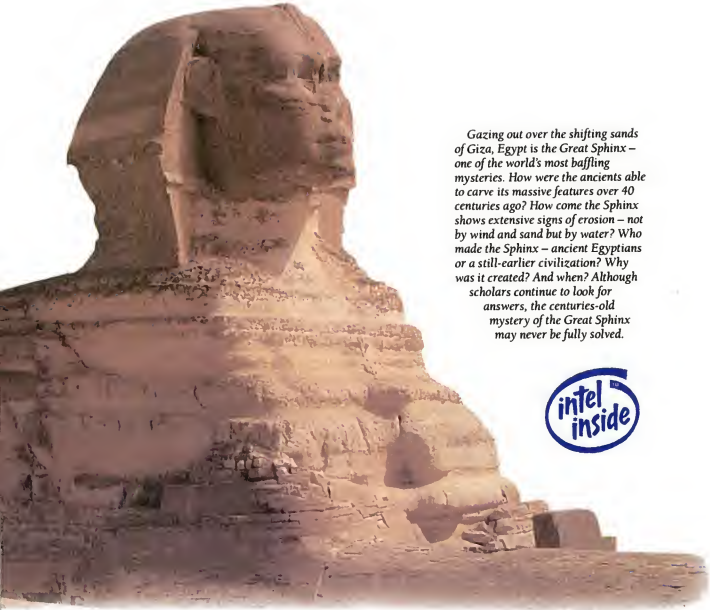
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Authorware Professional (Continued)

EASE OF USE

Authorware Professional follows the natural flow of events during the development process and minimizes the work necessary to move through these processes. The cursor is in the right place at the right time, and dialog boxes appear, automatically, when you most need them.

Authorware Professional also provides a large number of accelerator keys for jumping to various functions and windows. You can move objects with the mouse or the arrow keys, making precise placement a breeze.

While it may take a while to get used to the quirks in this product, once you master the basic concepts, its design makes a lot of sense. **Score: Excellent.**

SUPPORT POLICIES

Despite the relatively high cost of Authorware Professional, there is no free technical support (except one free courtesy call). Two days of training, at Authorware's offices in California, are part of the base price. Annual support costs $1,200. The lack of free support prevents a higher score. **Score: Poor.**

TECHNICAL SUPPORT

We were unable to make anonymous calls, so we award a default score. The technicians answered our questions accurately. **Score: Satisfactory.**

VALUE

Authorware, at $8,000, is expensive. Run-time licensing and maintenance/technical support are also expensive additions, substantially higher than IconAuthor's, its high-end competition. While Authorware Professional is an exceptional piece of software, and perhaps the smoothest development environment among these products, its value must be carefully weighed against the competition and the sort of work to be done.

Authorware Professional may be ideal for educators, who enjoy a substantial price discount ($995), or corporations involved in training, but the high cost and lack of technical support are not supported by its functionality — any of the other products in this comparison can produce quality productions at a fraction of the cost. **Score: Poor.**

IconAuthor (Continued)

EASE OF USE

A useful series of accelerator keys speeds development in IconAuthor. In addition, there are several tools that help you navigate through large applications. An icon find feature helps locate operations by function type, and the flowchart area is scrollable and its contents resizable at various zoom factors.

While IconAuthor is not a fully integrated development environment, Windows makes up the difference, because you can have all of the development tools running simultaneously. **Score: Very Good.**

SUPPORT POLICIES

Included in IconAuthor's $4,995 price tag is a four-day training course (at AimTech's offices). In addition, any product upgrades that are released during the first year are included. Follow-up maintenance/support is $300 per year. There is also support on CompuServe. **Score: Very Good.**

TECHNICAL SUPPORT

We quickly reached technical support representatives, and our questions were answered promptly and accurately. The technicians were well informed on the product and provided useful hints and fixes. **Score: Very Good.**

VALUE

IconAuthor, at $4,995, represents a sizable investment for many organizations. Run-time licensing fees range from free (the package includes six) to $50 each, in small quantities, to a maximum of $2,500 per course.

IconAuthor's benefits include its facilities to manage groups of projects. This is clearly a tool that would work well in a multideveloper environment. If bit-mapped graphics and animation are particularly important to you, you might want to factor in the cost of a third-party product to replace the IconAuthor's editors.

IconAuthor includes enough capability to build most types of multimedia titles, with the exception of heavily hypertext-oriented work. Its attractive development interface is well done, although somewhat less responsive during rapid development than Authorware Professional. **Score: Good.**

MacroMind Director (Continued)

EASE OF USE

Director 3.0 is basically simple to master — windows are well organized and easy to work with. QuickDraw objects are used as cast members, making animation facile. Cast to time, film looping, and auto-animate features enhance the creation process. **Score: Very Good.**

SUPPORT POLICIES

MacroMind/Paracomp provides toll-free, unlimited technical support for 90 days. After 90 days, you can purchase the Extended Support Plan for $170 per year per product. There is on-line support from America Online, AppleLink, and CompuServe. There is also a 30-day money-back guarantee. **Score: Good.**

TECHNICAL SUPPORT

The technical support staff answered our calls promptly and courteously. All of our questions were answered thoroughly and completely. **Score: Very Good.**

VALUE

Director 3.0, for $995, enables professionals to create high-quality productions with minimal effort. It literally has no peers on the Macintosh platform. Other products offer drawing and animation, but none approach Director's broad range of features. If you want to distribute your movies to Macintosh users, there is no additional cost. Windows Player, which creates Windows runtimes, currently lists for $995. Director's price compares favorably to packages on the PC. **Score: Very Good.**

Company: Authorware Inc., 275 Shoreline Drive, Fourth Floor, Redwood City, CA 94065; (415) 595-3101.

Company: AimTech Corp., 20 Trafalgar Square, Nashua, NH 03063; (603) 883-0220 or (800) 289-2884.

Company: MacroMind/Paracomp, 600 Townsend St., San Francisco, CA 94103; (415) 442-0200.

What's the best way to use video in your presentation? The picture is still fuzzy

One of the flashiest though most misunderstood pieces of the multimedia puzzle is video. In spite of vendors' promises, incorporating video into any computerized presentation remains difficult.

There are two types of video — analog and digital. Analog is basically video from a source — laser disc, VCR, or video camera — that is digitized or "passed through" your computer. You can place text on top of the video or capture individual frames, but the original video remains unchanged and must be played back each time from the source.

Digital video is images saved in digital form on a hard disk or CD ROM and has probably been compressed in one form or another. Digital video data can be manipulated, saved, or altered just like any other data; however, it takes a lot of storage space. A 30-second clip in 24-bit color at a resolution of 512 by 40 pixels can be stored on a CD ROM uncompressed but will take an hour to play back, so compression is a must.

COMPRESSION. The three major types are compression using fractals, vector quantization, and discrete cosine transform (DCT). Vector quantization has been around for some time and relies on basic math techniques for compression. It produces good quality images, but is not as sophisticated as DCT, which is based on more sophisticated techniques and produces higher quality images. Most of the companies using compression (except Intel's DVI) are using DCT.

The Joint Photographics Experts Group (JPEG) designed and approved a compression standard for still images. This standard theoretically enables images to be read by any piece of hardware that follows this standard. There are a few companies using this technique, but it still is not prevalent. The Motion Picture Experts Group (MPEG) has

Microsoft Multimedia Viewer (Continued)

EASE OF USE

Multimedia Viewer is a fairly simple environment and is not difficult to use. But until the developer becomes very familiar with the syntax used in Viewer's commands, there will be a lot of switching between the compiler, the resulting error listings, and Word for Windows. While this code/link/compile/debug cycle is common to many programming environments, it is a disjointed way to work. **Score: Satisfactory.**

POLICIES

Viewer is supported only as part of the Multimedia Development Kit, which includes no free technical support from Microsoft. Nor is there telephone support; developers are expected to use CompuServe or subscribe to Microsoft OnLine, a $795 per year electronic support program. The CompuServe forum includes the Microsoft KnowledgeBase, which has the answer to every question ever asked via CIS, according to Microsoft. **Score: Poor.**

TECHNICAL SUPPORT

In spite of Microsoft's official policy, we were able to anonymously insist on and receive telephone support from the general support line, and the technicians were helpful. We also got useful information from CompuServe. (We did not try the OnLine service.) **Score: Satisfactory.**

VALUE

The Multimedia Development Kit, with Multimedia Viewer, costs $495. Viewer can produce very polished applications — certainly worthy of being commercial products. There are very large gaps between the good and bad points in Multimedia Viewer — it has capabilities that can be found only in some very expensive software development tools (specifically, the full-text search engine) and some glaring deficiencies in the development environment, its lack of animation, and in support policies. Nonetheless, considering its low price and unique capabilities, Multimedia Viewer has real value. **Score: Good.**

Company: Microsoft Corp., 1 Microsoft Way, Redmond, WA 98052-6399; (800) 227-4679 or (800) 426-9400.

ToolBook and MRK (Continued)

EASE OF USE

All of ToolBook's components are well integrated. Most functions support keyboard or mouse/keyboard shortcuts that make navigation during development fast and easy, although certain shortcuts, such as selecting a page, are more difficult to discover and remember.

The icon and tool palette designs are mostly intuitive; however, certain aspects are difficult to remember, such as which little box on the color tray represents the fill color and which the stroke color.

You only view the fixed palette, attached to the color tray, rather than the active system palette. Nor is there optimization for the script editor; however, the editor does include keyboard accelerators, minimizing the need to switch between mouse and keyboard. **Score: Good.**

POLICIES

Asymetrix offers 45 days of free, but not toll-free, phone support. For ongoing support there is an annual fee of $149; this service still requires a toll-based 900 number ($3 per minute). There is a Developer Services Program for $595 annually. Asymetrix operates an internal BBS, as well. **Score: Poor.**

TECHNICAL SUPPORT

The technical support staff is knowledgeable with ToolBook but less so with the MRK. Our calls were answered fairly promptly and they suggested alternate solutions to our problems. **Score: Satisfactory.**

VALUE

Multimedia ToolBook, $695, offers a comprehensive set of development tools, allowing a developer to produce multimedia software at almost any level of sophistication. The price for long-term success in using ToolBook is the time spent in mastering its rich scripting language, though simple applications can be built quickly by novices. Building reusable scripts is possible with ToolBook, making it a candidate for multiproject efforts, but it will take some experience to discover how to construct for reusability. ToolBook offers a great range of potential uses. Animated multimedia presentations are easy to prepare; ToolBook may save you the price of a separate presentation package. It can be used to prototype applications destined for development in C and is used to build shrink-wrapped titles sold in the MPC marketplace. Hypertext-oriented reference titles are possible with ToolBook, although its lack of automated support for its hot-word feature limits the scope. Asymetrix asks no distribution or licensing fees for completed applications, and this, combined with its relatively low price, boosts its value. **Score: Very Good.**

Company: Asymetrix Corp., 110 110th Ave. N.E., Bellevue, WA 98004; (206) 637-1500.

Summary (Continued)

EASE OF USE

Authorware is the standout due to its logical flow and numerous accelerator keys. IconAuthor and Director are close behind. Viewer's text-based operation can be tedious.

POLICIES

IconAuthor is tops. With toll-free technical support for a year, it offers the strongest package in an otherwise poorly supported product category. Director is the only other product to earn a score higher than poor. The other three suffer from short free support periods, or lack free or direct vendor assistance.

TECHNICAL SUPPORT

When we were able to make our anonymous calls, the technicians did generally supply accurate and speedy responses. AimTech and MacroMind offered the strongest assistance. Microsoft helped us out, too, even though it officially does not support Viewer or the MDK by phone.

VALUE

Multimedia ToolBook and Director offer the best values in this group. With a reasonable price, free run-time licensing, and a solid development environment, ToolBook offers a great deal with few weaknesses. Director is the leading Macintosh authoring tool, without serious competition. Multimedia Viewer has great potential value for its targeted class of applications, although Microsoft needs to make it accessible to a broader user base. IconAuthor and Authorware Professional are very expensive; your needs should be precisely in line with their strengths before you buy.

also been working on a standard for video compression. Like JPEG, MPEG's standard will enable video and audio to be handled by any hardware that supports it.

Intel's video compression technique, DVI, is based on a chip (the 1750) that uses vector quantization compression techniques and comes in two different flavors — RTV and PLV. RTV can capture and compress video directly on a computer in real time (at 1/30th of a second) at a resolution of 160 by 120. PLV gives you full-screen (640 by 480), VHS-quality images at 30 frames per second, but it must be sent to Intel in order to be compressed.

WHAT'S IT ALL MEAN? Each of the major players in compression touts its solution as the best. Intel's DVI is based on a programmable chip and offers two quality levels of video; it is currently available on both Macintosh and PC platforms. RTV quality should be sufficient for most in-house applications; PLV is suitable for high-end or mass-distribution uses. AT&T has just announced a new chip (a digital signal processor, or DSP) that developers can put on add-in boards or directly on the system motherboard. This chip, called the AT&T DSP3210, is capable of being programmed to use JPEG, modem fax/data compression, and MPEG audio. In the future it will support MPEG video, MPC MIDI, and other audio compression techniques. The DVI and AT&T chips are currently available and can be used by third parties to produce compressed video. There are other companies (C-Cube, for example) that have their own chips for video compression based on the JPEG standard.

Both Microsoft and Apple have announced software that uses video compression: Apple's QuickTime and Microsoft's soon-to-be-released AVI standard. These techniques are generally slower and of lower quality than the hardware solutions, but they should work well for short clips.

Depending on your application, storage requirements, and hardware considerations, any of the technologies might be a good choice. However, the video standards are still in their infancy, and your best bet is to choose a piece of hardware that can keep up with the changing standards. Both DVI and AT&T's offerings are programmable, so they shouldn't leave you with an outdated product as standards change.

— Anne Kaliczak

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Bringing your flashy applications to life: four approaches to multimedia hardware

InfoWorld looked at a sampling of three MPC systems and one MPC upgrade kit. Each was configured a bit differently by the manufacturer, but we consistently evaluated the features, ease of setup and use, and our overall impressions from using the units. We didn't formally score or evaluate these systems, but we characterized the different vendors' approaches to the MPC standard.

IBM'S ULTIMEDIA. I'm convinced that the only way vendors can peddle multimedia to the masses is by delivering plug-and-play, preconfigured, reasonably bullet-proof, dirt-cheap systems.

Sure it's a lot to ask, but it's *not* the battle-worn, computer-savvy veterans who are going to make an MPC the thing to die for; it'll be those folks who need to product now and who don't have the time or inclination to worry about which interrupt request address is free.

At the core of IBM's first turnkey multimedia offering — the PS/2 Ultimedia Model M57 SLC — is IBM's 386SLC chip with 8K of on-board cache. This CPU should provide ample horsepower to support the demands of audio and image processing, as well as a platform to extend its capabilities into areas such as full-motion video. IBM is currently shipping the Action Media II Digital Video Interface (DVI) board, which supports both PLV and RTV compression specifications.

The system includes a powerful graphics engine. The on-board XGA with 1 megabyte of video memory is capable of delivering 256 colors at 1,024-by-768-pixel resolution or 65,000 colors at a 640-by-480 resolution. An M-Audio adapter connects to a built-in high-fidelity speaker with volume control. A stereo headphone jack and a monaural microphone input jack provide additional audio capabilities.

With 4 megabytes of memory, a 160-megabyte hard disk, and a CD ROM II drive, the basic configuration offers an acceptable platform to begin working with multimedia applications.

A single CD ROM disc contains all of the necessary drivers and operating systems software for DOS 5.0, Windows 3.0 with Multimedia Extensions 1.0, and OS/2 Standard Edition, Version 2.0 — eliminating the need to supply several dozen diskettes of system and application software.

Slated for release this month, the prototype unit I examined included all three operating system/environments pre-installed. A fair amount of get-acquainted tutorial and demo software was also installed.

I learned soon after starting that I had an early prototype. Although the sound capabilities were fine and the screen speed and color rendition were superior, it was clear that the system is still a collection of pieces rather than a coherent, well-integrated product.

A computer is really only as good as the sum of its parts. IBM's Ultimedia machine has a collection of very good components, but I'll have to wait and see if they really have a multimedia *system*.

IBM Corp., (800) 426-2468.

— Ron Copeland

COMPUADD'S MODEL 333. While CompuAdd's Model 333 Multimedia PC isn't really bulletproof nor as inexpensive, at $4,533, as I might like, it is a superior product that minimizes the pain of acquiring multimedia capabilities.

The model I looked at was based on a 33-MHz Intel 386 and included a 387 math coprocessor. It came configured with 4 megabytes of memory, a 30-inch high-density floppy drive, a 202-megabyte Western Digital IDE hard disk, a Sony CD ROM drive, a pair of 7¼-inch high-fidelity speakers, a 16-bit VGA card with 1 megabyte of video memory, and a 14-inch .28mm-dot-pitch Super VGA monitor.

More important, the Model 333 came pre-installed with CompuAdd's Multimedia Card DOS 5.0 and Microsoft Windows 3.0 and Multimedia Extensions. This may sound trivial, but if you've ever tried to install a multimedia setup from scratch and had to guess about which drivers get loaded when, you will appreciate pre-installed multimedia software.

The system included a few unexpected add-ons — an AM/FM antenna, a microphone, and a remote-control unit with infrared receiver.



GERALD ZAJAC

CompuAdd's Model 333 Multimedia PC comes with multimedia software pre-installed.

or voice, and hearing MIDI-originated sound bytes. This program also includes a system information module that inventories installed hardware and provides useful information about each.

After sampling a half-dozen CD ROM-based applications, I'm convinced that when an unbelievable multimedia application comes along, this hardware will be ready for it.

CompuAdd, (800) 456-3116.

— Ron Copeland

TANDY 4033 LX. The system I looked at was the Tandy 4033 LX Multimedia, which consists of a 33-MHz 386, 4 megabytes of RAM, 105-megabyte hard drive, 3½-inch high-density floppy disk drive, CD ROM drive of unspecified manufacture, and Creative Labs' Sound Blaster Pro sound card.

The unit came configured and ready to run: It started Windows automatically, and went directly to a CD ROM demo of the multimedia concept, the Tandy multimedia PC, and more than a dozen multimedia CD ROM titles, including a Multimedia Beethoven demo. Other demos include Our House (an odd multimedia history of domestic life), two language tutorial systems, *Time* magazine's Desert Storm CD (or touring the war at the speed of a CD ROM), the Electronic Library of Art, and a slew of multimedia authoring and programming products and services.

I was more impressed initially by the CD-quality audio than the mixing in of animation, photo-quality images, and tons of data. The sounds of Beethoven's Ninth that came from my inexpensive 5-inch Aiwa bookshelf speakers when plugged into the Sound Blaster wrung from my wife an exclamation of incredulity that these were the same speakers that serve up such tinny tunes when plugged into my personal tape player.

The Tandy includes a program, in DOS and Windows versions, for playing audio CDs. There's also a sound mixer for tuning right and left audio outputs. As dramatic as the sound was from Multimedia Beethoven, the disc used pathetic MIDI tones to demonstrate certain musical points in its tutorial. MIDI, even through a Sound Blaster, sounds like a tiny tot's xylophone.

Another issue I haven't seen mentioned before is the discomfort level that comes from spending 45 straight minutes staring intently at a 14-inch VGA screen; I guess paper books won't disappear from the scene in the near future after all.

The Tandy MPC's big selling point is that it comes ready to plug and play. But the unit I used is still not ready for the average user. The getting-started documentation, the only place that discusses setting up the Sound Blaster and speakers, was photocopied. The *Introducing Windows with Multimedia* manual was generic Microsoft with no Tandy-specific information and included no information on the CD ROM unit that came with the system.

The Tandy 4033LX Multimedia PC, equipped as described above, lists at $4,499.

— Michael E. McCarthy



IBM's Ultimedia Model M57 SLC carries an XGA board that displays 65,000 colors at 640-by-480 resolution.

The CompuAdd Rack offers an icon control panel that mirrors the remote unit. The Rack is an easy-to-understand and -use facility that was clearly well thought out and designed. It is clear from the Rack control panel that the system will also support a module not supplied with this review unit — a TV tuner.

An included CD ROM disc contains MMShaker, which familiarizes the user with high-profile multimedia capabilities such as playing voice and music from the CD ROM, recording a two-second burst of sound

UPGRADE KIT. If you don't mind opening a system and fooling around with its guts, upgrading to an MPC-compliant unit can be relatively inexpensive and painless.

I looked at the Media Vision Multimedia upgrade kit ($995), which includes a Pro Audio Spectrum sound board and Sony CD ROM drive (model CDU-541). The Pro Audio Spectrum board is the heart of the package. It's a SCSI board that lets your PC communicate with the CD ROM drive. The board has two multitimbral FM synthesizers that provide stereophonic 22-voice polyphony, a digitally controlled audio mixer that combines all audio sources and allows independent volume control over each stereo channel. The board also has hard disk recording and playback circuitry that lets you digitize any sound at sampling rates from 2 kHz to 44.1 kHz with 8-bit resolution.

On the back of the Pro Audio Spectrum board there is a microphone jack for recording sound; a stereo line-in jack to accept audio from tape, CD, or any audio source; a stereo line-out jack to send mixed audio to an amplification system; a stereo input that accepts sounds from internal or external CD ROM drive; a joystick port; and a MIDI port.

The software includes installation software for the CD ROM drive, Microsoft Windows with Multimedia Extensions 1.0, Compton's MultiMedia Encyclopedia, Jones in the Fast Lane video game, and a Nautilus screen saver.

Installing the sound board and CD ROM drive was merely a screw here and a set of drivers there. For me the hardest part was removing the cover from my computer and moving the internal drive cables out of the way.

The installation disk includes a setup utility that has CD ROM drivers, adds parameters based on what was found in the system, and proceeds to check that the CD ROM drive is communicating with your PC. You then reboot and install Windows with Multimedia Extensions from the CD. If a system is jam-packed with boards and the default DMA and IRQ settings won't do, the manual painfully takes you through alternate settings.

The documentation consists of a quick-start booklet, step-by-step installation guide, CD ROM drive operating instructions, and an introduction to Windows with Multimedia.

The Media Vision Multimedia upgrade kit is easy to set up if you are familiar with the inner workings of your PC hardware. It's a relatively inexpensive method of testing the multimedia waters without splurging for a whole new system.

Media Vision, (800) 348-7116.

— Andre Kvitka

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REVIEWS

Ventura Publisher upgrade changes little

Windows Edition maintains long-document strength; lacks irregular wraps, color separation

BY GALEN GRUMAN REVIEW BOARD

The latest version of Ventura Publisher Windows Edition 4.0 is a major and a minor upgrade. For those seeking professional color printing, Ventura 4.0 adds the necessary groundwork, although a separate product is required to produce any color separations used on a printing press. For those seeking to use Windows Object Linking and Embedding (OLE) linking technology to ensure up-to-date data files, Ventura 4.0 adds this capability. But the vast majority of Ventura users will find little reason to update from 1990's Version 3.0 (the DOS/GEM or the Windows edition) or even from 1988's Version 2.0 with Professional Extension — the base program has not changed much.

FEATURES:

In addition to OLE client support and the capability to define colors based on several color models (CMYK, Pantone Process, Pantone Spot, HLS, and RGB), Ventura 4.0 adds a spelling checker and search-and-replace tool. Other new features enhance existing capabilities. These include the capability to insert or remove multiple pages at once (you are no longer limited to one at a time), to put the date and time in headers and footers, to have footnotes break across pages, and to paste bit maps into your layout from the Windows clipboard. Import and export filters have also been updated; the most significant is support for 24-bit color TIFF files.

A welcome ease-of-use addition is the capability to set the line screen for your output device. (This is something that matters mostly to those printing to image setters such as the Linotronic 300.) Line screen (measured in lines per inch) is the number of horizontal and vertical lines per inch in an image, and this determines the output resolution. Most newspapers are printed at 70 to 85 line screen, whereas most catalogues or photography books are printed at 150 or higher line screen. Earlier DOS/GEM versions required that you edit a complex configuration file to do this, though the previous Windows version lacked the capability altogether.

Ventura continues to lack a major feature constantly requested by users: irregular text wrap. Apparently, Ventura Software had intended to include this feature but could not get it to function properly — the manual includes instructions for it, but the release notes say that the feature was never implemented. Another frequent user complaint, about Ventura's manual, non-WYSIWYG cropping, remains as before.

Despite the few fundamental enhancements since Version 2.0 Professional Extension, Ventura Publisher remains a strong product, although its competitors have steadily closed the gap and staked out areas where Ventura remains weak. For example, users who design layouts where text and graphics mingle will do better to look at Aldus PageMaker (Windows or Macintosh) or QuarkXPress (Macintosh and soon Windows). These programs (in their Macintosh versions, at least) also include color separation capabilities at no extra charge.



Ventura Publisher Windows Edition now supports OLE, so it can link to data and graphics created in other applications.

Ventura continues to offer the most flexible layout approach of any program — Macintosh or DOS — as well as the best typographic controls, long-document features such as anchored frames (where images and sidebars follow the text they refer to as it moves), and version control of any page-layout program. For black-and-white publishing, Ventura remains the strongest program, although the imminent release of FrameMaker for Windows may change that for those who do manuals and other nontypographic-intensive documents.

Catalog publishers who need color and Ventura's strong structured-document features will also find Ventura 4.0 the best (and often only) bet, but they will have to buy several Ventura add-on products such as Ventura Separator and Ventura Database Publisher to handle such high-end work.

PERFORMANCE:

Layout: Ventura Publisher's layout approach has remained unchanged for four years. Its use of movable, resizable frames, in which you pour text or place graphics, continues to make layouts flexible. Coupled with its unique assignment list of files that have been imported, Ventura's frame approach allows fast, simple experimentation without having to work with only one file at a time. Controls over margins, columns, and gutters also allow dynamic changes through simple actions. The capability to use a mouse or enter precise coordinates offers ease of use and precision. Another Ventura innovation is its anchoring feature, which lets you have a frame (containing a graphic, sidebar, or table, for example) following a particular spot in the text as the text flows in a changing layout. Although copied by PageMaker, Ventura's implementation remains stronger.

Ventura's layout control is also bolstered through its repeating frames (like master pages in other programs except frames can be turned off at any page without affecting other pages), column balancing (keeping columns the same depth), and vertical justification (keeping the text at the bottom of each column aligned).

These features all make it easy to structure a layout globally while changing individual elements easily at any time. Text wrap is automatic but limited to rectangles (frames). We rate layout very good.

Text handling: Ventura supports basic editing, such as cut and paste, and it offers spell checking and search and replace. The new features are helpful for editing changes made during layout, and Ventura's capability to spell check only files that have been modified is a boon. Ventura offers no built-in word processor the way PageMaker does, because there it is not necessary. Unlike PageMaker, whose export option strips out special characters and some layout and typographic formatting, any change made to text files imported into Ventura is automatically saved in the original file — including special characters and all formatting. Likewise, any changes made in the text files are automatically brought into your layout the next time you open it.

BENCHMARKS — INFO WORLD

High-End Desktop Publishers

	Ventura Publisher Windows Edition Version 4.0	Ventura Publisher Windows Edition[1] Version 3.0	Aldus PageMaker Windows[2] Version 4.0
Short Document[3]			
Open document	0:26	0:15	0:15
Jump to last page	0:02	0:02	0:02
Change view	0:14	0:26	0:05
Save/continue	0:07	0:06	0:03
Print	10:54	11:39	5:57
Long Document[4]			
Open document	0:29	0:20	0:12
Jump to last page	0:07	0:03	0:01
Change view	0:01	0:01	0:02
Save/continue	0:06	0:05	0:08
Print	10:25	10:48	6:24
Flow text	0:31	0:02	0:15

Times in minutes:seconds, unless otherwise noted. Our test platform was a Compaq Deskpro 386/20e with 4 megabytes of RAM and a 110-megabyte hard drive.
[1]Ventura Publisher for Windows 3.0 was reviewed November 5, 1990, page 69.
[2]Aldus PageMaker for Windows, Version 4.0 was reviewed April 1, 1991, page 63.
[3]Short document is four pages.
[4]Long document is approximately 18 pages.

INSIDE REVIEWS

IBM PS/2 Model 56 SX 102

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Ventura's other text handling remains the same, including the best table editor and equation generator available; full features for tables of contents; indexes; page and chapter numbers; footnotes; section, figure, and table numbers; and automatic captions. We rate text handling very good.

Typography: Regarding layout, these features remain essentially unchanged. Still, few programs approach Ventura's broad range of control, even when they offer the same levels of precision. The features that distinguish Ventura are its automated bullets, automated paragraph and section numbering (up to 10 levels), automated drop caps (including full control over the typeface and size used for the drop cap, in addition to the number of lines deep), and the capability to alter the leading on a case-by-case basis when you have text, such as equations, that would otherwise overprint onto other lines.

Ventura lets you control leading, indents, tracking, word spacing, color, and rules for each paragraph style, as well as the size and position of superscripts, subscripts, small caps, underlines, and strikethroughs. Ventura offers widow and orphan control, interactive tracking, and the option to display lines that exceed the paragraph's maximum spacing specifications.

Ventura cannot expand or condense type, or rotate type in user-defined increments. It also lacks a feature included in the DOS/GEM version to edit the Windows kerning table. (Edco Services offers the $99 LetrTruck program to do this.) Overall, we rate typography very good.

Graphics creation: Ventura offers basic drawing features, such as rectangles, lines, and ovals, plus more advanced options such as user-defined line weights and the capability to place arrowheads. You can also specify a graphic's border to be a different color than its fill. We rate graphics creation good.

Graphics manipulation: Ventura has the basic manipulation features, including resizing and cropping. But the cropping process requires that you enter numeric values — a non-WYSIWYG approach that is cumbersome and requires trial and error for each graphic. We rate graphics manipulation satisfactory.

Import/export: Ventura's text import handles any character formatting such as boldface and italics but strips out any font or style information from your word processor. This lack of support for style sheets makes less sense under Windows than when Ventura was a DOS-only program, since most Windows word processors support style sheets and most

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Of course, if you've noticed another recent change in InfoWorld, you're probably not surprised that we've extended our enterprise computing coverage. It's just under our name on the front page, where we now call InfoWorld "The Voice of Personal Computing in the Enterprise."

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INFO WORLD

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REPORT CARD — **INFO WORLD**

HIGH-END DESKTOP PUBLISHING

Ventura Publisher Windows Edition

VERSION 4.0

Criterion	(Weighting)	Score
Performance		
Layout	(100)	Very Good
Text handling	(75)	Very Good
Typography	(75)	Very Good
Graphic creation	(25)	Good
Graphic manipulation	(75)	Satisfactory
Import/export	(50)	Very Good
Output	(50)	Good
Speed	(50)	Satisfactory
Documentation	(75)	Very Good
Ease of learning	(75)	Very Good
Ease of use	(100)	Very Good
Error handling	(50)	Satisfactory
Support		
Support policies	(50)	Satisfactory
Technical support	(50)	Poor
Value	(100)	Very Good
Final score		**6.5**

PRODUCT SUMMARY

Company: Ventura Software Inc., 15175 Innovation Drive, San Diego, CA 92128; (800) 822-8221.

List Price: $795.

Requires: Intel 286 or compatible (20-MHz 386 or better recommended); MS-DOS 3.3 or later; Windows 3.0 or later; 4 megabytes of RAM, Hercules, EGA, or higher video card; mouse or other pointing device; hard disk.

Pros: Strong typographic, document-management, and structured-layout controls; all files are accessible for use in layout at any time; supports OLE.

Cons: Poor color support without add-on products; no nonrectangular wrap; non-WYSIWYG cropping.

Summary: The best publishing program for Windows, though it lacks some features standard to desktop publishing.

Windows users are likely to do some formatting in their original text files and some in their layout programs. Ventura supports all popular DOS and Windows file formats (for import and export) except Ami Pro's.

Ventura supports all popular graphics formats for DOS, Windows, and Macintosh except Windows BMP. New formats include 24-bit support for TIFF, PCX, and EPS images, as well as the emerging DCS (Desktop Color Separation) standard for color-separated images.

Through OLE you can establish live connections to data or graphics in other Windows programs. If a program supports OLE, you can ensure that the latest data is reflected in your publication. This is designed for data-driven graphics such as Excel charts, as Excel will update the chart whenever underlying data changes.

Ventura's OLE support expands the two-way version control the program has always offered for text, where any changes in the text were written to the original word processing file, including any code for Ventura-specific formatting and characters. Ventura also always supports the latest version of your text and graphics files when you open a layout. We rate import/export very good.

Output capabilities: Ventura 4.0 improves its control over output quality.

Ventura Publisher lets you establish live connections via OLE to data or graphics in other Windows programs.

You can now set your line screen to match the best resolution for your output device, and the program also supports Pantone colors. But Ventura does not output color separations, despite the addition of process-color options in its color-definition dialog box. A separate product (the $495 Ventura Separator) is required. Ventura's halftone control for gray-scale images remains limited to TIFF files; gray-scale PCX is not supported. Ventura does output spot colors, an added layer of color that goes on one position on a page. Overall, we rate output good.

Speed: Ventura 4.0 runs faster than its predecessor, but the program takes what seems like forever to load. You'll find yourself minimizing the program rather than exiting it. We found that Ventura was faster than the previous version on the short document and about the same on the long document. We rate speed satisfactory.

DOCUMENTATION:

Ventura Software's documentation has improved since the last version — a welcome change. And the core remains the original superb documentation written nearly six years ago by the program's creators. The latest version includes an extremely helpful appendix on printing and typeface concerns that wasn't in the previous version. There is also a new section on OLE that is poorly written, making incomprehensible an already murky topic. Fortunately, this is an exception in a generally clear, well-organized reference manual. A well-conceived quick-reference guide and a serviceable training guide accompany the reference manual. The on-line help is adequate, offering basic information on common tasks. We rate the documentation very good.

EASE OF LEARNING:

Ventura offers a broad range of high-end features and thus has always been a small challenge to learn. But the arrangement of menus and dialog boxes for the most part groups tasks logically. And the interface's design lets users learn powerful or arcane features gradually, because the program's defaults are sufficient to let most novice users ignore high-end or complex settings until they understand or need to use them. The training guide, many example chapters, and the reference manual's appendixes also aid learning. We rate ease of learning very good.

EASE OF USE:

Ventura's interface under Windows is well conceived, grouping most features where you'd expect to find them. The capability to set user preferences for measurements on a dialog-by-dialog basis and to customize many work-style preferences globally also aids usability. The interface could be better, as users of the Macintosh version know from that version's handy quick-jump dialog in the option-laden Paragraph menu.

But Ventura continues to lack WYSIWYG cropping, — a basic requirement in a graphical program. This is a common task that all the other major publishing programs have long treated graphically. Ventura would also benefit from having





an option to display a status bar like XPress and the new PageMaker for Macintosh offer. While Ventura pioneered the use of coordinates for exact placement of frames, it does not let users see these coordinates as they resize or select elements with a mouse. When no one else supported positioning by coordinates, that was no serious omission, but now that Ventura's chief competitors have copied the technique and improved on it, Ventura has fallen behind. We rate ease of use very good.

ERROR HANDLING:
Ventura has the warning features you'd expect when quitting without saving, but it lacks the incremental save feature that PageMaker offers as you turn pages, which helps ensure smoother recovery in case of a system crash.

We had several unrecoverable application errors and did lose some data. However, these seemed to be caused by a style-sheet corruption when we inadvertently tried to open a Ventura 4.0 file in Ventura 3.0. Restoring the former style sheet did away with most of the UAEs.

A welcome addition is an undo function. We rate error handling satisfactory.

SUPPORT:
Support policies: Ventura Software offers

Ventura 4.0 is competitively priced, and its rich feature set is certainly worth the cost.

free technical support via a toll number to registered customers for 90 days after the first support call. Support hours are 6 a.m. to 5 p.m. Monday through Friday Pacific time. In addition, Ventura offers fax and BBS support. Optional support plans offering access to a toll-free number are also available. We rate support policies satisfactory.

Technical support: Ventura's technical support continues to be weak. We received vague, incorrect, or partially correct answers to difficult questions. One technician even tried to talk us through a nonexistent feature (irregular text wrap). We rate technical support poor.

VALUE:
At $795, Ventura is priced competitively, and its rich feature set is certainly worth the cost. But Ventura's pricing for its add-ons is high, particularly for the color separator, since XPress includes that feature and Aldus now bundles its separator product with PageMaker for Macintosh and is expected to do the same for its Windows version. While most users don't print in color, Ventura's pricing difference is considerable for users of color-intensive documents. But for the majority of users who don't use color, Ventura remains a very good value. □

Gaien Gruman has set up an electronic publishing system for a bimonthly trade magazine and a quarterly Computer Press Association newsletter. He has evaluated MS-DOS and Macintosh desktop publishing and graphics programs for several years.

IBM breaks usual form, ships fastest 386/20

Model 56SLC takes top spot by large margin with boost in performance and CPU speed

BY TIM ZITTLE TEST CENTER
AND KAREN A. BROPHY REVIEWS

IBM should break conventions more often. Big Blue, which has historically avoided the coprocessor market, has developed its new 386SLC chip in cooperation with Intel and Burlington. The chip, which incorporates 8K of integrated cache, boosts the PS/2 Model 56SLC to the top performance position in its class. The chip also holds an optimized instruction set and a floating-point coprocessor.

We tested a beta version of the 386SLC in the PS/2 Model 57SX (October 21, 1991, page 163) and noticed a dramatic improvement in all speed categories. The final result is indisputably the fastest 386/20 we have tested.

In CPU speed, the 56SLC was 42 percent faster than Northgate Slimline 32, the leader in our last product comparison (February 25, 1991, page 53) and only 2 percent slower than the average 486SX/20.

This Model 56SLC outruns any previous IBM we've seen in this class; it is 80 percent faster than the Model 40SX (reviewed October 7, 1991, page 72), the fastest IBM 386SX/20 to date.

In disk-intensive scores, the Model 56SLC was 6 percent faster than the Northgate and 17 percent faster than the average 386/20. The IBM excelled in multitasking scores, surpassing the Northgate by 31 percent and the Model 40SX by 70 percent.

There were no compatibility problems with the PS/2 Model 56SLC.

Expandability for the system is not as beefy as previous models. There are three 32-bit expansion slots. The motherboard comes with 4 megabytes of 70 nanosecond SIMMs and supports a maximum of 16 megabytes of RAM. It houses two external 5¼-inch drive bays but has no internal drive bays. The largest hard drive available is 400 megabytes. After our test configuration, all three 32-bit slots were open and no drive bays were free.

The PS/2 Model 56SLC's setup was smooth as with most IBM machines. The hard and floppy drives slide into drive bays and lock themselves in place; no screws or tools are required. The memory uses SIMMs and is easy to install. However, the expansion cards need to be removed to add extra SIMM panels. Setup can be either ROM or disk-based. The system cannot directly access the ROM-based setup, though, unless something has been changed on your system (i.e., added drive). To access the setup when nothing has changed, you must use a disk.

This is a well-designed system with no patches found on the motherboard. The small footprint provides case lock protection and a swinging door makes accessing the drives simple. There are keyboard and password locks available through software.

In CPU speed, the 56SLC was 42 percent faster than Northgate Slimline, our prior leader.

Technical support scores are based on a reader survey.

The Model 56SLC, sold through dealer channels, is priced at $4,030 as configured for our tests. The Northgate Slimline 32 is $2,599 direct. With a 25 percent dealer discount, the price of the Model 56SLC is extremely competitive and the excellent performance well worth the slightly higher price.

The PS/2 Model 56SLC now ranks as the superior machine in its class. The new SLC chip sets a challenging precedent in the 386SLC market. The speed of this chip machine rivals the average 486SX; it's a great value for anyone looking for a fast machine without the high price tag.□

STAND-ALONE APPLICATIONS TESTS — INFO WORLD

20-MHz 386 Computers
(Times are in minutes:seconds)

Vendor	Speed score times: CPU-intensive	Disk-intensive	Multitasking
IBM PS/2 Model 56SLC	23:06	46:55	2:42
Northgate Slimline 32[1]	32:44	49:51	3:32
IBM PS/2 Model 57SX[2]	43:12	1:02:17	4:13
IBM PS/2 Model 40SX[3]	41:29	56:58	4:36
20-MHz 386SX average	36:45	54:55	3:57

[1] Leader in February 25, 1991, product comparison, page 53.
[2] Tested without 386 SLC chip, October 21, 1991, page 163.
[3] IBM PS/2 Model 40SX reviewed October 7, 1991, page 72.

REPORT CARD — INFO WORLD



20-MHz 386SLC MCA COMPUTER

IBM PS/2 Model 56SLC

Criterion	(Weighting)	Score
Performance		
Speed CPU-intensive	(150)	Excellent
Speed disk-intensive	(100)	Excellent
Speed multitasking	(125)	Excellent
Compatibility	(150)	Excellent
Expandability *Three 32-bit slots, two 5¼-inch drive bays; up to 16 megabytes of RAM.*	(75)	Satisfactory
Documentation	(50)	Satisfactory
Setup *Easy access to memory modules, coprocessor socket, ROM based.*	(75)	Very Good
Serviceability		
System design *Small footprint; drives removable via swinging door; easy access to SIMMS; no patches found.*	(50)	Very Good
Support policies	(50)	Satisfactory
Technical support *Score based on reader survey.*	(75)	Good
Value	(100)	Very Good
Final score		**8.2**

PRODUCT SUMMARY

Company: IBM Corp., 1133 Westchester Ave., White Plains, NY 10604; (800) IBM-9292.
List price: $4,030 as configured; sold through dealer channels.
Features: 20-MHz zero-wait-state 80386SLC CPU; one each serial, parallel, mouse, SCSI ports; 16-bit VGA built in; MCA bus; 118-watt power supply.
Peripherals: Enhanced keyboard.
Storage and memory: 160-megabyte hard disk with SCSI 1:1 controller; 1.44 megabyte 3½-inch floppy drive; 4 megabytes of 70-nanosecond RAM (16 megabytes maximum).
Pros: Fastest 386/20 tested; system is easy to setup and maintain; well-constructed machine.
Cons: Needs more expandability options.
Summary: The fastest machine in its class offering near 486SX speed at a very reasonable price.



Buyers Advisory / Brett Glass

When you absolutely, positively must have more serial ports

I have a 486 with two serial ports on a combination card. I tried two other cards that have COM3 and COM4 on them, and I've played around with the interrupts, but I can't get three working serial ports. I talked to my vendor, and they said the only solution is to buy a three- or four-port card.

Dan Linscheid

A COM3 and COM4 aren't a standard part of the IBM PC architecture. Because they're so prone to cause conflicts, I never use them. However, if you absolutely must have more than two serial ports, here's how to avoid trouble. First, place ports that share interrupts on the same physical card. (COM1 and COM3 share Interrupt 4, and COM2 and COM4 share Interrupt 3, so these pairs should be grouped together.) This gives you at least a fighting chance of avoiding hardware conflicts between cards. Second, avoid using interrupt-driven applications on two ports that share the same interrupt. Examples of interrupt-driven applications include mouse drivers, serial communications programs, and serial port networks. (DOS doesn't use interrupts to control printers, so using the Mode command to direct printer output to a serial port counts as a non-interrupt-driven application.)

All of these tactics are work-arounds, however. If I were you, I'd get a bus mouse, a parallel printer, or put a parallel-to-serial converter on a parallel port.

Q Is there a way to use a Debug command or a Copy command to determine if a serial port is functional?

Dale Purdy

A If you want to find out whether a serial port is present, type the command:

D 40:00 L 8

at the Debug prompt. You'll see 8 hexadecimal bytes giving the I/O addresses of up to four serial ports (or zero if they weren't detected by the BIOS). If the BIOS didn't detect a standard port (i.e. COM1 or COM2), it may not be working. (Nonstandard ports may not appear in the table even if they're present.) A Copy command works in only one direction, so it won't do a good job of testing a port by itself. A better way is to connect a modem and see if you can communicate with it. Another is to get a commercial diagnostic kit. It will come with software and a special loopback plug to test the port.

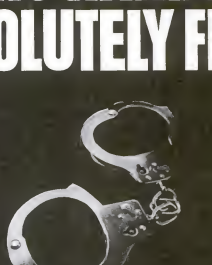
Q After purchasing a new 386-based clone, I decided to load it up with 20 megabytes of memory for CAD programs and in anticipation of having to use Windows (a memory hog) in the near future. Lo and behold, after I upgraded to DOS 5.0 and its memory manager, only 15 megabytes was available for use. A call to Microsoft revealed that DOS 5.0's memory managers can only control up to 16 megabytes, and memory beyond is wasted! I quickly switched to 386 Max (Version 5 at the time), which allowed me to use the full 20 megabytes of memory. But when I tried to run Windows, an error message appeared telling me that Windows won't run with more than 16 megabytes, and that I should *remove* memory to bring the total to 16 megabytes or less. (I had to upgrade to Version 6 of 386 Max to solve this problem.) Why has Microsoft created this memory limitation?

John Wesolowski

A According to a Microsoft spokesman, Windows 3.0 and XMS 2.0 were limited to 16 megabytes by the calling conventions of IBM's PC/AT ROM BIOS. (The AT, as you may recall, could not address more than 16 megabytes.) Now that the industry has reached an informal consensus on ways of accessing more memory, DOS and Windows will support them. Windows 3.1 supports more than 16 megabytes and will come with memory managers that do so as well.

Contributing Editor Brett Glass answers reader questions on technical issues in this weekly column. Brett cannot answer questions personally. Readers can leave questions by calling (800) 227-8365, Ext. 702 or by messaging CompuServe (72267,3673).

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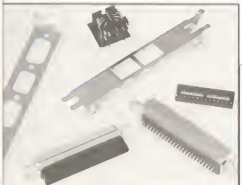
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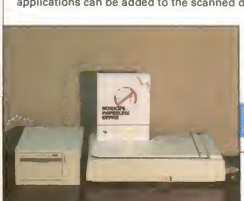
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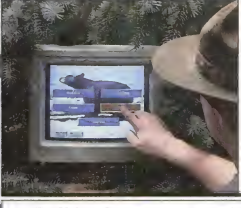
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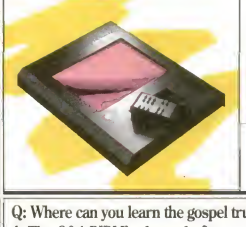
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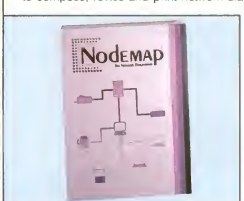


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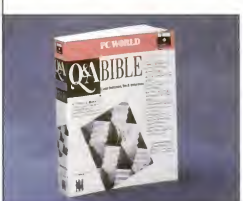


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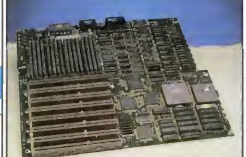
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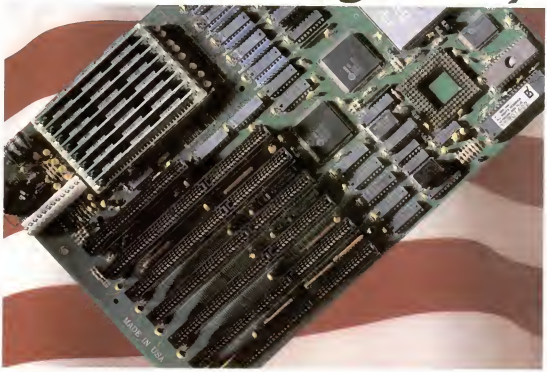
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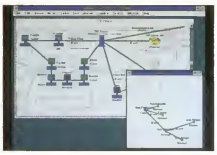
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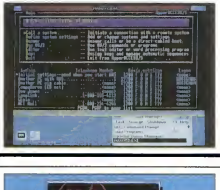
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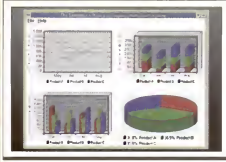
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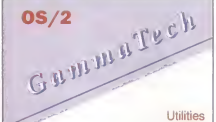


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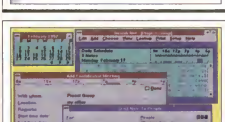
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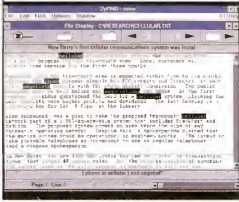
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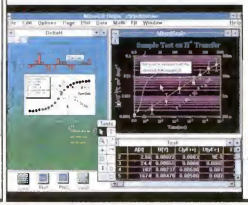
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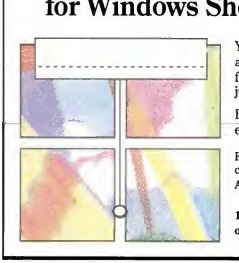


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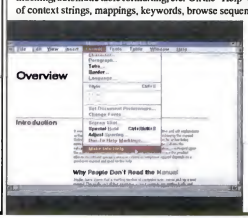
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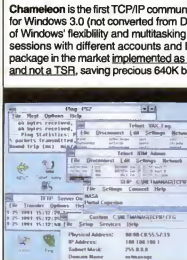
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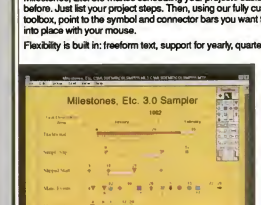
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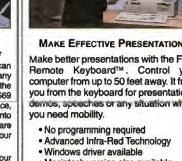
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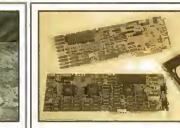


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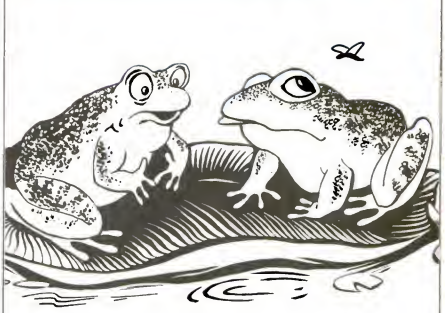
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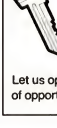
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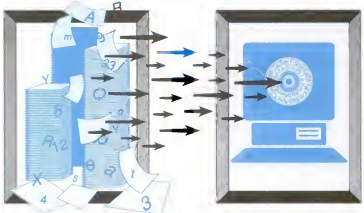
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APPLE / from page 1

Apple breaks into modular systems

either a bold attempt to define a competitor's operating system, or a last desperate chance to maintain a strong software developers' base for the Macintosh.

"We intend to be a defining force in systems software for any important technology," said Roger Heinen, vice president and general manager of the Macintosh system software division on Apple's move to the Windows architecture.

It will also keep Mac ISVs loyal, said Kirk Loevner, director of the Apple Developer Group.

"More and more, ISVs are telling us that if they develop software that takes advantage of the Mac's features, they want to be able to put that software on Windows without the expense of rewriting their code."

"This is just Apple admitting that the game is over and they aren't a real alternative to Microsoft in the OS market anymore," said William Bluestein, a senior analyst with Forrester Research, in Cambridge, Massachusetts. "This year, Microsoft's installed base for Windows will reach 10 million users, with the entire installed base of the Macintosh at maybe 7 million users," Bluestein said. "When developers look at those numbers, it doesn't take a genius to figure out what platform they ought to support." Other observers gave Apple at least a chance to succeed in transforming itself into a systems software company, particularly with an aggressive retail plan.

"This is an interesting attempt by Apple to make money on their systems software," said Douglas Kass, a senior analyst with Dataquest. "But their success depends on how aggressively they try to sell it."

To really succeed as a systems software company, however, Apple will have to broaden its base of prospective customers, Kass added.

Apple redefines the Mac OS

Apple's modular OS extensions
- Imaging engine
- AppleScript
- OCE
- QuickTime starter kit
- Handwriting recognition
- Speech recognition

Windows support
- QuickTime for Windows
- OCE
- AppleScript

OCE / from page 1

OCE provides workflow engine

nications (IAC), file sharing, directories, and communications across different platforms and support a number of existing E-mail systems. These include cc:Mail, QuickMail, and Microsoft Mail in addition to Apple's own Mail system that will be introduced later this year.

Part of OCE's appeal is its promise to provide a single mailbox, directory list, and API set for all of those messaging systems, observers said.

Other features that will be integral to OCE's development as a workflow system include data encryption technology licensed by Apple from RSA Data Security, password-protected signature verification for electronic documents, an expanded API set that works with OCE's directories across networks, and the use of intelligent agents for unattended computing.

"Networking has been successful," Sidhu said, "but not as successful as many of us would have predicted or liked. The problem is we've been shoving technology down the users' throats instead of providing them with services that help them work the way they want to work."

By providing OCE as a layer that can coordinate the electronic use of a variety of E-mail and electronic documents across multiple platforms in the enterprise, Apple can take the lead in providing users with a nearly invisible layer of workflow solutions, Sidhu added.

"What Apple's trying to provide here goes way beyond just E-mail," agreed Anne Palermo, a workflow analyst for International Data Corp., in Framingham, Massachussetts. "But the key to Apple's success is its ability to really make OCE a cross-platform technology, and I just don't get a clear sense of exactly how they intend to accomplish that," she said.

Sidhu acknowledged that multiple platform support is essential to making OCE more than just a powerful version of AppleMail, which it started out as three years ago, and that Apple just isn't ready to disclose how it will get multiplatform support for OCE.

"There's a variety of ways that it can be done, [including Apple porting needed portions of Toolbox to the Windows environment]," Sidhu noted. "[But] those decisions haven't been made yet."

NETWARE / from page 1

Novell will enhance NetWare 2.2

extensions to the NetWare management environment, better printing and backup services, internationalization, and a host of other software drivers, said John Edwards, Novell's vice president of marketing.

"Certainly with more than 1 million sites there is no way we won't support our NetWare 2.x customers," Edwards said.

Asked whether Novell would release a NetWare 2.3 product that would bundle the new planned services with the current NetWare 2.2, Edwards said, "It's conceivable, but we're not announcing anything yet."

Of special interest to NetWare 2.2 users is Novell's likely commitment to extend some network management features now available only on NetWare 3.x (386-based) products. Through Novell's development of an agent bundled with IPX, NetWare 2.2 users will this year gain access to such features as notification, the capability to build historical databases, and enhanced configuration options, such as WANs and hubs.

Novell might have inadvertently caused industry speculation that Version 2.2 was being abandoned by indicating the company's focus was more on the 3.x line, Edwards said.

But, he said the new NetWare 2.2 enhancements do not reflect a change of heart. "They've been on our development list for more than a year."

Despite these NetWare 2.2 additions, users should not expect large-scale improvements. "There are some higher level technologies where we need a 32-bit platform," Edwards said. "But Novell is committed to building a high degree of integration between NetWare 2.x and 3.x."

The NetWare 2.2 upgrades will be available this spring.

Apple says to industry: 'The Mac is not dead'

BY TOM QUINLAN

NAPA, CA — Last week Apple Computer Inc. moved to reassure users that multiple endeavors with IBM Corp. and an increasing interest in the consumer market do not spell the end of its flagship Macintosh line.

In an unusual move, Apple executives spent two days showcasing their development and marketing plans for the Macintosh operating system for the next year.

The Macintosh System Software Forum, held last week in California's wine country, was widely seen as a reaction to the pressure the company is under to prove that the Macintosh is still a viable platform.

"The Macintosh is not dead," said Apple president Michael Spindler. A day later chairman and CEO John Sculley predicted "The Macintosh will be the main source of Apple's revenues for the next five years at least."

The biggest motivation behind the Macintosh summit, however, was probably the threat posed by Apple's own offspring, Taligent.

"Our focus with both the Macintosh and Taligent is user driven," Sculley said about Apple's object-oriented project. "Looking into the future we knew someone else would do it and that they wouldn't do it with the user's needs in mind. This way Apple and the Macintosh are both a part of this new computing environment," he said.

"What Taligent is doing is not designed to replace the Macintosh, instead we think it complements it and enhances its usefulness," Sculley said.

"We're not going to do to the Macintosh what we did to the Apple II," said Chris Espinosa, Apple's liaison with Taligent. "[The operating systems] really are designed to serve two different sets of user needs.

"We're not going to stop developing and improving the Mac OS while we wait for at least three years to see what Taligent comes out with," Espinosa added.



Guruharan Sidhu outlined Apple's OCE strategy at the Mac forum last week.

MERGER / from page 1

WordStar, Delrina set to merge

marketing.

Delrina, which had 1991 sales of $11.9 million, is best known for its market-leading forms processing and fax software technology. While the company — currently valued at $55.8 million — has been lauded for its sophisticated technology, the forms market didn't meet market researchers' original predictions.

WordStar, which still enjoys a huge slice of the word processing pie with more than 5 million users, restated its 1991 year-end sales numbers down from $41.9 million to $35.6 million to account for its change from a calendar year to a fiscal year that ran from July to June. WordStar's current market value is $60 million.

Delrina, which is expected to remain based in Toronto, could help WordStar in its attempt to offer products that are complementary to its line of word processing products.

Since Posner took the WordStar helm more than 1½ years ago, the company has also acquired Lifetree Inc., which makes up its Writing Tools Division, released a Windows version of WordStar, and recently updated its flagship DOS program.

LOTUS / from page 1

Moves into multimedia arena

complained is an aging product line.

Lotus' position on multimedia is significantly different from that of Microsoft, Tandy, CompuAdd, and other companies that have pioneered what Barlow called playstations, designed to bring multimedia games and learning tools into the home.

"They're basically a couch experience. Our multimedia titles are centered on productivity and business uses," Barlow said.

Lotus is not yet ready to make specific product announcements, although it could do so as early as this week.

Lotus insiders describe this week's events as a "coming out party" for John Landry, hired last November as chief technical officer. Lotus is expected to demonstrate its multimedia technology, Chronicle workgroup-enabled applications, an updated 1-2-3 for Windows, and a pair of updated 1-2-3 DOS releases.

Analysts are optimistic about what they see as Lotus' renewed technological emphasis under Landry.

REVIEWS / TEST DRIVES

STATISTICS

Fastat retains most of Systat for lower price

BY ALAN FRIDLUND

Fastat 2.0 is Systat Inc.'s first low-end statistical package for the PC (besides the student version, Mystat).

A downsized version of its big brother, Systat, Version 5.03, Fastat uses the same programs with just a few changes; it's much more like Systat for DOS than its namesake, Fastat for the Mac. The programs are modified so they operate only within Fastat's menu (Systat lets you call up program modules independently), and data capacity is limited to 150 variables (Systat allows 256 variables).

All of Systat's statistical talents are present except for three procedures that most users won't miss: nonlinear regression, cluster analysis, and multidimensional scaling. There are also reduced capabilities in specific routines, such as

Fastat inherits Systat's stunning graphics, including an extra plot type.

the omission of several commands that allow multivariate analyses of variance. Even with these omissions and the limits on variables, Fastat for DOS is still a powerhouse package.

You can cross-tabulate your data, calculate summary statistics, and graph exploratory plots, such as stem-and-leaf and box-and-whisker plots. Fastat includes a range of nonparametric stats, correlations, simultaneous and stepwise regressions, and factor analyses. Fastat includes Systat's stunning graphics — even a "traveling salesman" plot that Systat doesn't have.

I discovered that Fastat has more Systat capabilities than its manual documents. For example, you can access Systat's powerful internal Basic interpreter for complex data manipulations, and the Stats module does Tukey HSD comparisons. On the other hand, Systat's graphic Draw and Write commands don't work in Fastat, though they're mentioned in the help screens. Fastat has Systat's sluggish, awkward editor.

All in all, Fastat offers a phenomenal number of features for half the price of Systat. Other packages in the same price range let you handle more variables (SPSS/PC+ Basic Statistics) or offer a wider range of statistical capabilities (Solo from BMDP Statistical Software Inc.), but none equals Fastat's combination of analytic depth, useful documentation, and sophisticated, customizable graphics.

Fastat 2.0 lists for $495 from Systat Inc., 1800 Sherman Avenue, Evanston, IL 60201; (708) 864-5670.

IMAGE EDITING SOFTWARE

Tempra Pro can't meet the competition

BY PATRICK MARSHALL

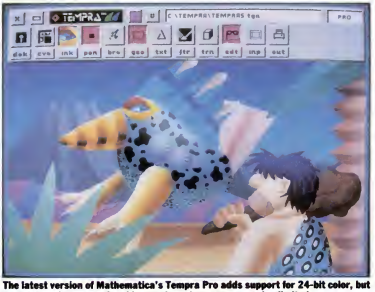
Mathematica's Tempra Pro, Version 2.0 has its strong points, but is it worthy of the label that appears on the box — "the ultimate personal imaging tool"? How can an editor that doesn't even include a smudge tool or a magic wand for masking claim to be the ultimate imaging tool, personal or otherwise? For $495, you would expect more than six image filters.

Maybe the word personal is a hint that Tempra Pro lacks features found in such high-end programs as Image-In Color Professional, and even some features found in programs that cost less than $200. For instance, you can work with four-color models in Tempra Pro — RGB, HSV, HSL, and CMYK — but you can't create separations for printing.

Tempra also lacks other sophisticated color correction and prepress tools. It doesn't have a fade-out effect for brushes; however, there's a work-around to achieve the effect.

As a DOS program, Tempra has a definite speed advantage over Windows image editors in loading and displaying images. However, its filtering, redrawing, and tool operations weren't particularly fast, even when I used the program's $295 Turbo Charger. Using the airbrush slowed my 25-MHz 386 system (equipped with 8 megabytes of RAM) to a crawl.

Tempra Pro's interface is clunky. Its main feature is a nonfloating menu bar



The latest version of Mathematica's Tempra Pro adds support for 24-bit color, but the program's support for video cards and scanners remains limited.

with obscure labels. (CVS, for instance, is the icon for changing your display resolution.) It's also unnerving how using a scroll bar makes the screen disappear before the program moves the image to its new location.

And for some reason, Tempra Pro doesn't let you keep any menus or other elements, such as palettes, on-screen while you're working on an image. That makes it cumbersome to adjust a brush or color.

With the influx of high-quality, low-priced image editors hitting the market, Tempra Pro is going to find it difficult to keep up with the competition.

Mathematica, 402 S. Kentucky Ave., Lakeland, FL 33801; (813) 682-1128.

REPORT WRITER

R&R Report Writer enters Paradox world

Popular third-party add-on looks and acts just like dBase version

BY MAURICE FRANK

For the last six years, Concentric Data Systems' R&R Report Writer has been the third-party report generator of choice for users of dBase and compatible databases. Now there's R&R for Paradox.

R&R for Paradox is based on Borland's Paradox Engine, but



R&R lets you move, copy, and delete fields in groups.

it looks and acts exactly like the popular dBase R&R banded report writer. It requires no programming. R&R replicates all of Paradox's report writing features and adds a few extras. You can apply fonts to individual fields or lines. It also supports proportional fonts and PostScript. There's a WYSIWYG graphical preview mode, and totals and subtotals can be preprocessed to create percent-of-total fields.

In addition, R&R can relate tables (including one-to-many relations) and use fields from any table in the report. It comes with all the standard reporting capabilities; you can have up to eight levels of group header and footer lines, plus title and summary bands. Sorting and grouping can use existing indexes.

R&R will sort on any field in the report, even calculated fields. You can define subtotals for each group level. However, you have to total each column separately, a tiresome process if there are many calculated fields in your report. R&R's query facility makes building complex query criteria easy, though.

The program provides several dozen built-in functions and allows user-defined functions. Printing is one of R&R's strong points. It can apply bold, italic, and underline to fields and lines. R&R supports a wide variety of printers, up to eight at once.

R&R's user interface is based on a Lotus 1-2-3 style "ring" menu, which Paradox also has. R&R is easy to use, but its interface is aging. A CUA facelift and mouse support would help.

R&R for Paradox lists for $249, including an unlimited runtime module, from Concentric Data Systems Inc., 110 Turnpike Road, Westboro, MA 01581; (800) 325-9035.

COLOR NOTEBOOK

Dell portable notebook is a pleasure to use

325NC's colors aren't bright, but it's fast, the batteries last a long time, and the price is right

BY BRYAN HASTINGS

The color notebook is the hot portable PC product of 1992, but it's been as vaporous as the 386SX notebook was a year ago. Many companies announced color notebooks as far back as November, but Dell is among the first to come through with one.

The Dell 325NC has the best passive-matrix color screen I've seen. But even so, it's plagued by pale colors, low contrast, and slow refresh rates. I was always tweaking the backlight and contrast controls, especially in changing light conditions, and I often lost the mouse cursor after it scurried across the screen. (I cured the latter ill with an included cursor-customizing program that tripled the pointer size.) Also, the screen displays only 16 colors simultaneously in VGA.

Apart from mild screen complaints, I found the 325NC a pleasure to use. The heart of this notebook is a 25-MHz 386SL processor. I liked the ease of the Suspend/Resume feature, which let me turn the notebook off and on in mid-program just by closing and opening the lid.

The power-stingy SL chip and the high-capacity nickel-metal hydride battery pack account for my 2 hours and 20 minutes of AC-free computing, and that includes a lot of hopping between DOS and Windows. The keyboard also rates highly. It's not too cramped, the keys have good travel, and there are separate keys for Home, End, Page Up, and Page Down, as well as arrow keys set in the inverted-T shape.

My unit came with the standard 4 megabytes of RAM, enough to run Windows smoothly with several applications going at once. You can add an additional 1 to 8 megabytes of RAM by sliding out a panel located above the keyboard that exposes the memory sockets. The unit can also support a coprocessor. There's a slot for an internal fax/data modem and a PS/2 mouse connector, in addition to the usual array of ports.

LAN users take note: The enhanced parallel port handles data much faster than its predecessors — so much faster, in fact, that the performance you get from using an external network adapter is similar to that of a desktop LAN station.

At $3,999, including a 60-megabyte hard drive, 4 megabytes of RAM, and 64K of cache, Dell's 325NC notebook is aggressively priced, costing about the same as similar notebooks from Toshiba and Compaq, which have only monochrome screens.

Dell Computer Corp., 9505 Arboretum Blvd., Austin, TX, 78759; (800) 289-3355, (512) 338-4400.



The Dell color portable weighs 7.1 pounds and comes with a battery that lasts up to three hours.

IMAGING SOFTWARE

IFD makes DataEase images possible

BY LAURA WONNACOTT

Need to incorporate images into your existing DataEase applications? If so, take a look at Imaging for DataEase (IFD).

IFD lets you include images or documents as a part of data collection, storage, and retrieval. As with text data, images can become part of normal database activities, such as querying and reporting.

IFD accepts input from either a video camera or a scanner and stores the images as standard PCX files. IFD is also capable of converting to its PCX format any images or documents stored in other formats.

IFD stores image files as 8-bit color and documents as 1-bit monochrome. IFD utilities let you crop images and change the brightness, contrast, and color balance. Placing an image on a record-entry screen is easy, and no matter what the size of the original image, IFD will scale the image to best fit the size of your image frame, while retaining the image's aspect ratio. IFD offers an on-line scanning application, which you can use in your own DataEase applications.

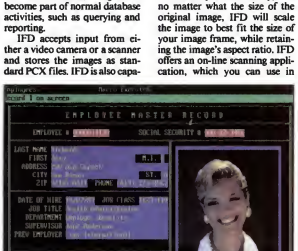
Similar to DataEase, IFD's strength lies in its ability to provide functionality without programming. Using extended macro commands and a keystroke recorder, you can put a host of IFD commands to work by providing complex image processing capabilities.

You can use IFD macros in DataEase record-entry forms and DataEase Query Language (DQL) data-entry and input forms but not in user menus or DataEase system forms. IFD requires the extended memory version of DataEase (DE16M), a Super VGA card with 512K of RAM, and an annoying security key attached to your parallel port.

I encountered one problem while using IFD: Images did not clear from my screen after I escaped from record entry. I fixed this by removing the SMARTDRV.SYS cache statement from my CONFIG.SYS file. Solana said the next version of IFD will correct this problem.

The single-user version of Imaging for DataEase lists for $995; IFD for a 10-station LAN costs $2,495. IFD works with DataEase 4.2 and later.

Solana Software International, 3751 Sixth Ave., San Diego, CA 92103; (800) 748-5596.



Imaging for DataEase lets you easily incorporate images into your DataEase databases, such as this personnel application.

DOS UTILITY

'WhatThe' utility intercepts cryptic DOS error messages

BY TOM BIGLEY

DOS error messages have been unnerving hapless users since the dawn of PC computing. AutoSoft can't prevent the problems that generate those abort, retry, and ignore messages, but its WhatThe utility can reduce the trauma.

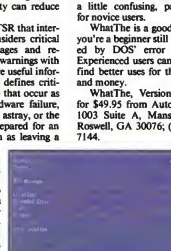
WhatThe is a TSR that intercepts what it considers critical DOS error messages and replaces the cryptic warnings with a screenful of more useful information. AutoSoft defines critical errors as those that occur as the result of hardware failure, programs running astray, or the user not being prepared for an operation — such as leaving a drive door open.

What The's screen contains a lot of information — perhaps too much. It quotes the DOS error message and repeats it in its own terms. It suggests likely causes and what you can try to correct the problem. Finally, it adds a reminder on which of the abort, retry, ignore options you can safely use and displays them with the recommended option flashing.

Because WhatThe lists DOS descriptions of error situations before offering its own diagnosis, the initial information it offers can be technical and even a little confusing, particularly for novice users.

WhatThe is a good option if you're a beginner still intimidated by DOS' error messages. Experienced users can probably find better uses for their RAM and money.

WhatThe, Version 1.1 lists for $49.95 from AutoSoft Inc., 1003 Suite A, Mansell Road, Roswell, GA 30076; (800) 252-7144.



WhatThe translates intimidating DOS messages into simpler diagnoses.

Sculley juggles Apple's priorities with Mac, Pink

Despite Apple's launch of two businesses and success with the new Macs, there is still plenty of skepticism about the company — its role in the corporate market, its ability to maintain the momentum of the Mac product line, and its ability to implement its latest strategies.

Those strategies are the product of its chief executive and chairman, John Sculley, who managed the company out of a major crisis seven years ago and through several ups and downs in the interim.

Apple is doing very well now — unit sales for the Mac increased 60 percent last year, giving the company nearly twice the market share it held before. And the company is making money, a relative rarity among hardware companies these days, and it has successfully reduced its cost base to accommodate a lower price structure.

Sculley is now putting his own stamp on the company as chief relationship builder and technologist.

InfoWorld *caught up with Sculley at the close of a two-day conference held by Apple last week in the wine country north of San Francisco to brief the press and analysts on its Macintosh system software strategy and future technologies.*

IW: How does Apple participate in the development of network applications when so much of the focus is on NetWare and Windows?

Sculley: There are two ways: First, we have tried to open our technology to other vendors. For example, we are planning to move OCE (Open Collaborative Environment) to other platforms. Second, we offer a very different model of what electronic mail can be. Instead of just sending messages, we let customers use the transport and workflow features of OCE to take applications not written for network use and add the functionality needed to make those applications useful in a networked environment.

IW: Your OCE announcements focus on using E-mail as a transport mechanism for workflow applications. Lotus Notes represents a different approach to sharing information through a distributed database. Do you think there is a conflict between these two approaches?

Sculley: No, not at all. We are working closely with Lotus, not just to get the Notes client on the Macintosh but also to develop that database technology. If Lotus is successful in its effort to reduce the cost of Notes and spread it more widely among organizations, we want to make sure that Apple is part of that.

IW: As this Macintosh System Software Forum came to a close, the message seemed to be that Macintosh has a great future on the 68000 and PowerPC hardware, but that Taligent is on its own and must prove its own value.

Sculley: We are an enthusiastic co-owner of Taligent. What Taligent is trying to do is to address a new class of problems that can't be addressed with current operating systems — to provide custom solutions for enterprises. We don't view Pink as a replacement for the Macintosh OS.

The Macintosh is still the core of what we do. The bet we have made is that by the time Taligent delivers what it's doing, the hardware platforms will be more powerful, and most people will be in a situation where they have multiple platforms.

IW: *InfoWorld* readers are concerned that personal electronics will distract Apple from their particular problems. How do you handle dealing with two different customers?

Sculley: I believe once they see the personal electronics products, they will be interested in ways to incorporate them into the system investment they have today. Some of these devices will make it easier to carry around and access information. When Apple talks about personal electronics, we look at how to improve productivity for people and organizations and not just the consumer marketplace.

IW: The competitive environment for Apple is clearly focused on Windows. Do you spend much time looking at Windows software? What is the most interesting Windows application you've seen recently?

Sculley: Windows applications fall into two categories: There are those that are ported from Macintosh programs and look pretty similar to the original Macintosh software. The other is focused on compute-intensive applications that are important to business, and that's an area where we aren't strong.

In the final analysis, Windows is the newest face-lift on DOS, but it's still DOS underneath. As long as Microsoft can persuade people that they can't innovate unless they work in DOS, they will continue to be successful. We have invested in developing new technologies, like those in QuickTime and OCE.

Really, the whole point is that Windows doesn't address any new opportunities, such as time-based synchronization with QuickTime; or enable applications with E-mail the way OCE does; or script technology like AppleScript, which is a whole level beyond either HyperCard or Visual Basic. Microsoft has done a masterful job of leading people to believe that all that's needed is an easier DOS. People are beginning to realize that there is a price to pay for shutting off innovation.

ONE ON ONE



John Sculley
CEO & Chairman
Apple Computer Inc.
Cupertino, CA
Age: 52

Notes From The Field / Robert X. Cringely

App Hack will make Windows 3.1 a moveable feast of compatibility

Hemingway wrote his novels standing up, using a fireplace mantle for a desk, but he paid bills sitting down. Right now I am sitting down, so what does that tell you?

I write this column on Thursday night, so I have no way of knowing whether the Michelangelo virus created all the expected havoc. I did hear from one guy, though, who cleverly set his system clock to March 6 to see if his PC was infected. It was, and he lost his data. Hemingway would have appreciated that.

I'LL HAVE OS/2 2.0 AND A CORN DOG. Pammy, who knows many things that I don't know, did not know that Hemingway was a famous novelist. On the other hand, I knew nothing at all about the superior quality of Paul Mitchell hair care products.

For its part, IBM appears to know next to nothing about how to motivate dealers to carry OS/2 2.0. Dealers complain that they won't make money if Big Blue prices OS/2 below $100 as expected. Meanwhile IBM marketing executives suggested last week that dealers set up mobile OS/2 2.0 booths at shopping malls and state fairs. Between the french fry trailer and the two-headed calf seems just the right place



IRON CROFT / INFOWORLD

to sell a multitasking OS with a graphical front end.

But IBM will only show up at the fair if they get the bugs out of OS/2 2.0. Beta 2.304 was crashing instantly on a Model 90 I know. There were DLL errors in the WorkPlace Shell; putting shadows in the startup folder proved fatal; and the install program wouldn't work with a 5¼-inch B: drive installed.

NOW A HACK BECOMES A FEATURE. We read Hemingway's *The Old Man and the Sea* together one night. I cried for the old man, Pammy cried for the fish.

The plan at Microsoft is for no users to cry at all when they upgrade from Windows 3.0 to 3.1. Intent on both nuking OS/2 2.0 and getting all 10 million Windows 3.0 users to fork over another 50 bucks for 3.1, Microsoft has come up with a special piece of code called App Hacks, which is intended to make Windows 3.1 work with all 3.0 applications. App Hacks, which will ship with 3.1, identifies each application, then refers to a table of work-arounds, reconfiguring Windows 3.1 as needed. The code was finished last week. I'm sure at least a few apps will have been missed though.

SIZE MATTERS AT BORLAND. With his simple declarative sentences (not at all the Cringely style), Hemingway would have fit right in at Borland, where all 5¼-inch floppies are assumed to be 1.2-meg floppies. That's the way it is at least for the Quattro Pro 4.0 upgrade. If your system has a lower density drive, you'll have to mail a special form, provide proof of purchase, and maybe take a blood test, and even then it's a two- to four-week wait for the odd-ball disks.

Even stranger stuff comes from from WordPerfect, where only the *Hebrew* version is copy-protected.

DISINTEGRATED WOZ MACHINE. While IBM is already losing interest in its Kaleida multimedia partnership, Apple has apparently lost interest in the venerable Apple II. After 15 years and a zillion machines, the last engineers are reportedly looking for other jobs inside the company.

Also due for a change is the Macintosh look and feel, the interface that launched a thousand suits, mainly worn by lawyers. Apple plans to split the UI, making a more complex version for overly complicated people and a much simpler version that Cupertino hopes will be usable by illiterates. I should give it a try to see if they've succeeded.

"Hemingway killed himself in 1960, wracked with pain from a back injury and depressed by old age," I explained to Pammy.

"Must have been before Advil," mused Pammy, mistress of nonprescription drugs.

Before Tylenol, too. But seriously, I'm aching for you to call me with an Industry secret at (415) 312-0555; fax: (415) 326-0326, or cringe@mcimail.com

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PC Magazine, (June 25, 1991)

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